MAY/JUNE 1988

PRACTICAL WINERY VINEYARD

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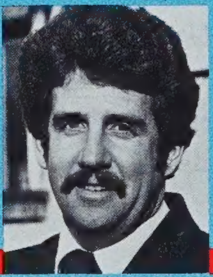

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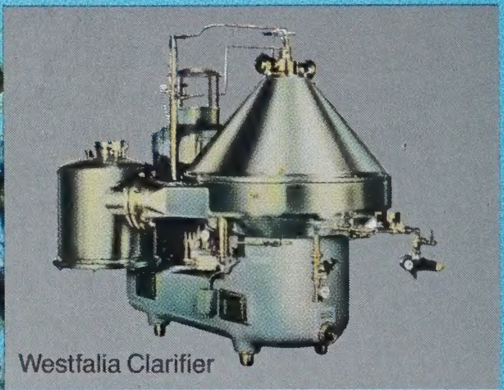

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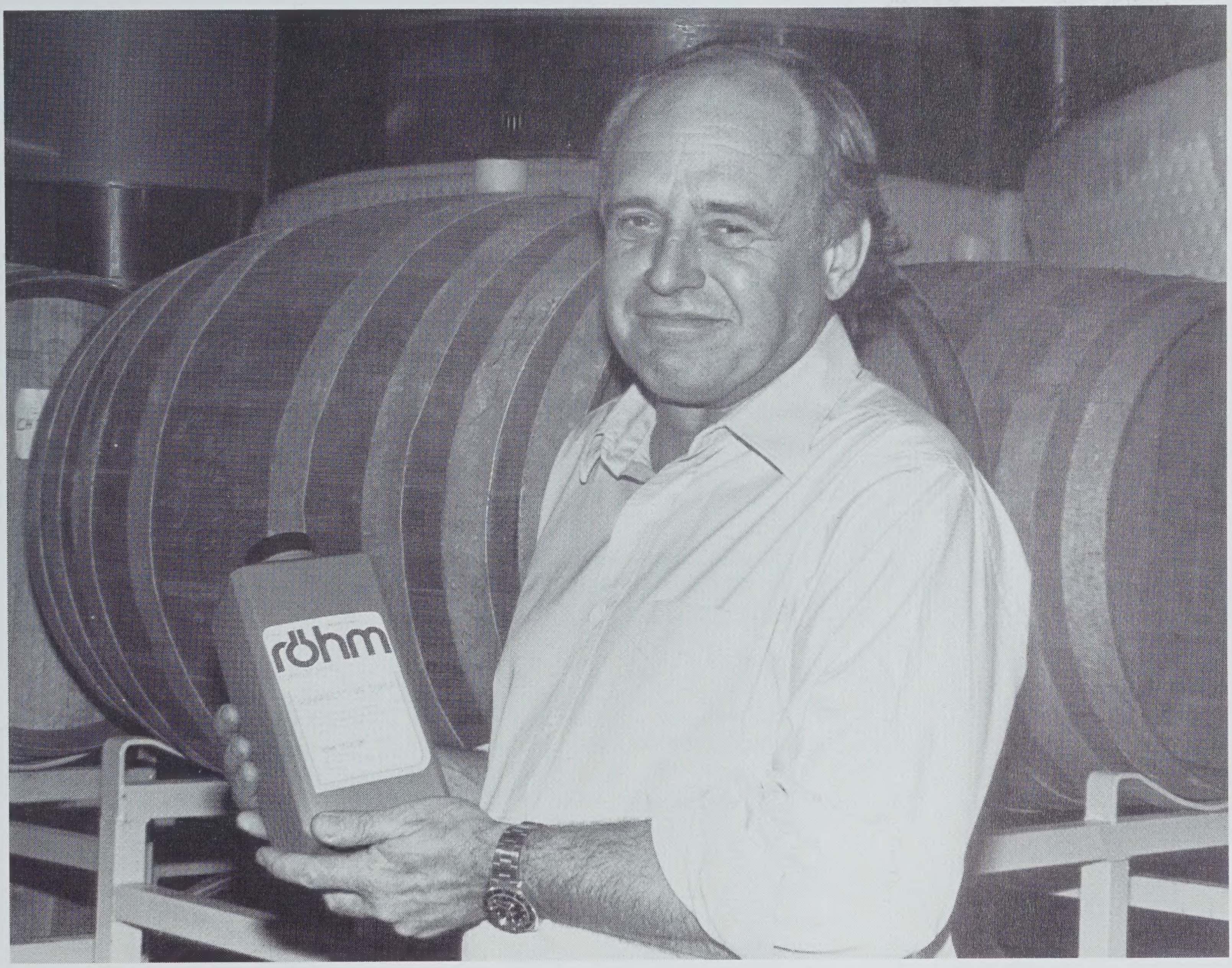

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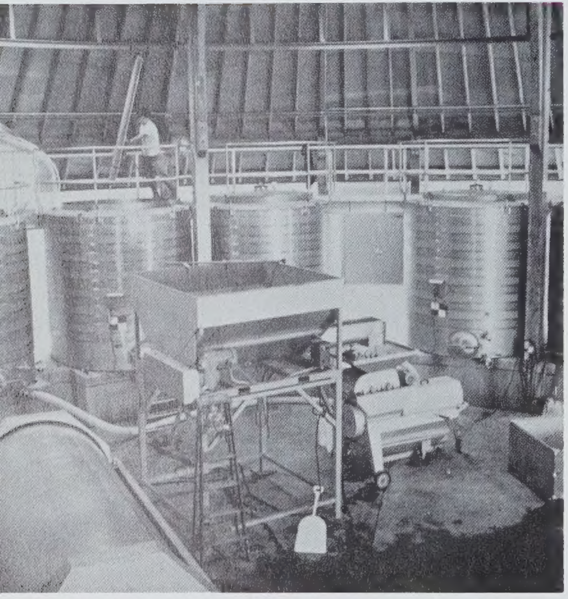

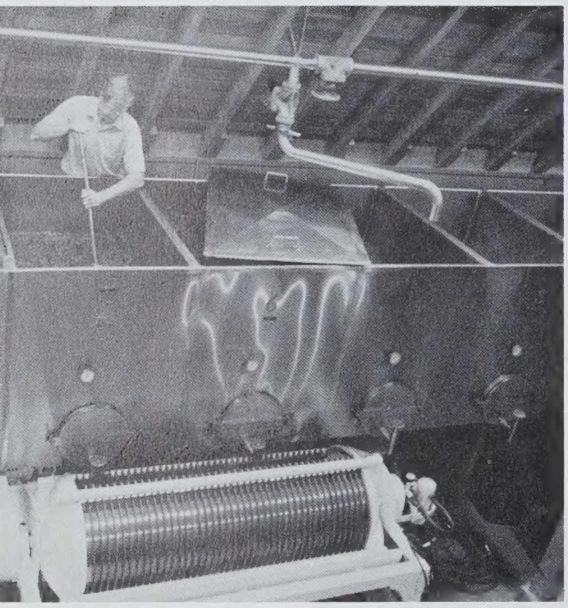

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PRACTICAL WINERY & VINEYARD

Cover: Aerial of Hess Vineyards in the Mayacamas Mountains, Napa, CA, by Don Neel and pilot, Leon Scarbrough.

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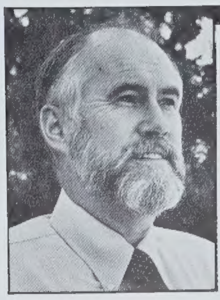


Winery Water & Waste

D.R. Storm, Ph.D, P.E.

Loppers

The dictionary definition of 'lop' is ***to cut off****, as with the limb of a tree. Anyone who has had a pair of loppers in their hands, or has observed a vineyard worker at work during vine pruning, is impressed by the fundamental simplicity of the tool.*

Choosing a lopper is very much like selecting a tennis racquet, golf club or baseball bat. You heft it; swing it; let it straddle your shoulder like the pros do when tying up a sagging cordon; and cycle it several times to see that the blades and pivot connection were properly machined and assembled.

Handle length is also an operator preference. I have toyed with the idea of ultra-long or telescoping handles to permit me to prune basal suckers from the upright position. I have a pair which I found after a vineyard disking about six years ago. I lovingly restored them by supplying two new oak handles (redrilled to fit the ancient hole pattern) and wire brushing, and by sharpening the blades and giving the pivot connection a short blast of WD-40.

Most professionals feel my antique lopper's action is 'too loose', but in this occasional vineyard-pruner's opinion, they produce less shoulder and pectoral muscle fatigue after a long day. Now I know why Ted Williams' favorite bat is enshrined in the Baseball Hall of Fame—it probably was really loose!

PIPE – Part I

All wineries use some form of pipe, both internally for conveyance of product or waste and externally for drains, electrical conduits, sewers, and potable and irrigation water supply. In the March/April 1988 *PWV*, I discussed my personal experiences with a now-obsolete World War II construction necessity—cardboard pipe impregnated with coal-tar.

Listed below are what I believe to be the most appropriate uses for the many acceptable pipe materials and jointing systems that are available in today's marketplace. The subject is broad, so rather than lose your attention with a complete treatise in this column, I will address it in two parts.

Materials

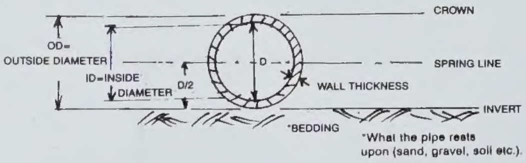
Pipe is made from almost all construction materials, both metallic and non-metallic, that exhibit strength, corrosion resistance and good hydraulic characteristics. 'Strength' is both 'internal' (the ability to resist internal pressures) and 'external' (the ability to resist superimposed, static loads of soil or dynamic loads of machinery/equipment).

I will list the materials of pipe construction because they are impressive in number: wood, clay (vitrified and non-vitrified), concrete, asbestos-cement, fiberglass, aluminum (and its alloys), steel (and its alloys), resins (thermoplastic pipe), cast-iron, wrought iron, rubber, paper (coal-tar impregnated cardboard), titanium, copper, and glass.

A designer thus is faced with a dazzling array of pipe material choices for any given application. In the selection process, many pipe options will be rejected without further analysis, because of specific service requirements and/or cost.

For example, gravity sewer applications (as compared to pressure sewers) generally do not have internal pressures above atmospheric pressure (zero, gauge pressure). External loads on gravity sewers come only from the soil load above the top (crown) of the pipe. Figure 1 is offered to illustrate the anatomy of pipe, and standard pipe nomenclature.

Figure I



In the gravity sewer pipe example, any one of several options could be chosen: clay, asbestos-cement, fiberglass, plastic, or cast-iron. In the designer's library are (or should be) pipe manuals representing each of the construction material categories. Included in these manuals is some pertinent information:

- limitations on the use of the pipe
- recommendations on pipe bedding (see Figure 1)
- range in sizes, standard lengths and wall thickness (pressure ratings), and
- hydraulic characteristics (roughness factors for hydraulic calculations).

The manuals are prepared by industry groups, institutes and associations. While there is some bias shown in the individual manuals for the pipe material represented, I have found them to be straightforward, technically sound and of great assistance in quickly determining whether a pipe material should even be considered.

I have referenced the pipe design manuals at the end of this column. In addition to these source materials are less elaborate, but useful design guides published by the respective pipe manufacturers. (It is likely that if you send a request on your winery letterhead, you could receive your own personal copy.)

Standards

As you might imagine, governmental and quasi-governmental organizations have established standards for pipe produced from the materials essential to the construction needs of government and industry.

For example, the ASTM (American Society for Testing Materials) consists of a group of consumers and producers, who through a vigorous testing and evaluation program rate the performance of pipe (among other things), and establish an alpha-numeric code for each pipe system, including pipe fittings, pipe joints and installation practices.

Choosing a pipe system with an ASTM designation ensures that it meets or exceeds the designer's requirements for intended use. Plumbing and Building Codes often reference an ASTM, or other accepted, specification in their published code as the minimum standard acceptable.

The list of government, industry and quasi-governmental organizations with an interest in standardizing pipe manufacture, performance, and testing is almost as impressive as the list of available pipe materials:

(1) A.S.T.M. – American Society for Testing Materials
(2) A.N.S.I. – American National Standards Institute, Inc.
(3) U.S. D.O.T. O.P.S. – U.S. Department of Transportation, Office of Pipeline Safety (Natural Gas)
(4) USDA, SCS – U.S. Department of Agriculture, Soil Conservation Service
(5) DOD – U.S. Department of Defense, Military Standards
(6) Corp of Engineers – U.S. Army Corp of Engineers
(7) DHUD – U.S. Dept. of Housing and Urban Developing
(8) FHA – U.S. Federal Housing Administration, Architectural Standards Division
(9) NEMA – National Electrical Manufacturers Association (electrical conduit)
(10) NSF – National Sanitation Foundation
(11) IAPMO – Int. Assn. of Plumbing and Mech. Officials
(12) ICBO – International Conference of Building Officials
(13) SBCC – Southern Building Code Congress
(14) NAPHCC – Nat. Assn. of Plumbing, Heating and CoolingContractors
(15) UL – Underwriters Laboratories (electrical conduit)
(16) API – American Petroleum Institute
(17) AWWA – American Water Works Assn.
(18) ISO – International Standards Assn.
(19) NFPA – National Fire Protection Assn.

While this apparent overlap of interest and responsibility among different groups appears confusing, there does seem to be an underlying logic. Designers and contractors need to be confident that their systems will perform as designed, whether it is a steel gas pipeline, a steel fire-protection piping network in an 80-story highrise in New York City, or a high-pressure steam line on a U.S. Navy destroyer.

Pipe Marking and Labelling

Just as BATF requires the proper marking of bottled wine, so do the pipe manufacturers need to identify their pipe—its size, ASTM or other standard designation, pressure rating (if any), and material of construction.

One caution here—you might see a bargain on, for example, unmarked PVC (polyvinylchloride) pipe that you desperately need to expand your vineyard irrigation system. Understand that the manufacturer is admitting to you, by the absence of suitable markings, that the pipe may not be capable of much of anything except to produce an Excedrin headache of large proportions.

Part II of this provocative subject will address:

- Modes of pipe failure (how to avoid them!)
- Water hammer (not something to use with 'Liquid Plumr' to unplug a sluggish sink)
- Thrust blocking (not an NFL term), and
- Joint systems, inspection and pressure testing. ■

David Storm is a consulting Civil and Sanitary Engineer and owner of Winters Winery.

References

(1) Handbook of PVC Pipe – Plastic Pipe Association, 2655 Villa Cr. Drive, No. 164, Dallas, TX 75234.

(2) Handbook of Steel Drainage and Highway Construction Products – American Iron and Steel Institute, 1000 16th Street, NW, Washington, D.C. 20036.

(3) Clay Pipe Engineering Manual – National Clay Pipe Institute Crystal Lake, Il.

(4) Handbook of Cast Iron Pipe – Cast Iron Pipe Research Assn., Chicago, IL 60601.

(5) Concrete Pipe Handbook – American Concrete Pipe Assn., 228 No. La Salle St., Chicago, IL.

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In the Cellar

Jake Lorenzo

After a long night of serious tequila drinking I opened my eyes to a hallucination. My drinking companion of the night before, Lance Cutler, was wearing a suit and tie—something he had never done before. I was in a room filled with wine salesmen and Lance was making a speech which I recorded. Here it is:

It has come to my attention that wild and slanderous rumors about me are emanating from the Napa Valley. Certain anonymous Naphonies say that I am no longer the easy-going, tequila-drinking madman I once was—that I have become a pinstriped, stiff-lipped, conceited salesman like all those gilded wine personalities in Napa. This is patently untrue. I'm here to tell you the real story.

Gundlach Bundschu Winery (GBW) is celebrating its 130th consecutive harvest this year. One hundred and thirty years of continuous farming and daily wine-drinking have left five generations of Gundlachs, Bundschus, and Cutlers hardened, knowing, and finely attuned to the cycles of nature. This dedication to the grape from vine to glass has influenced us deeply.

At a time when many in our industry seem content to produce bland, simple wines designed to offend no one, our goal has been to produce unique, intense wines that will thrill and excite every person with the foresight to seek them out. Our wines have great fruit, huge tannins, and POWER. 'Finesse' is not a word in the GBW vocabulary. All of you know this.

What you don't know is that, before I went to work in the wine business, I personally conducted serious drug, alcohol, and chemical research. During the eleven years I've been making wine at GBW, I have continued that research, aided by my mentors—Dr. Iggy Calamari, inventor of the wine-powered pacemaker, and Jake Lorenzo, a local private eye of disparaged credentials.

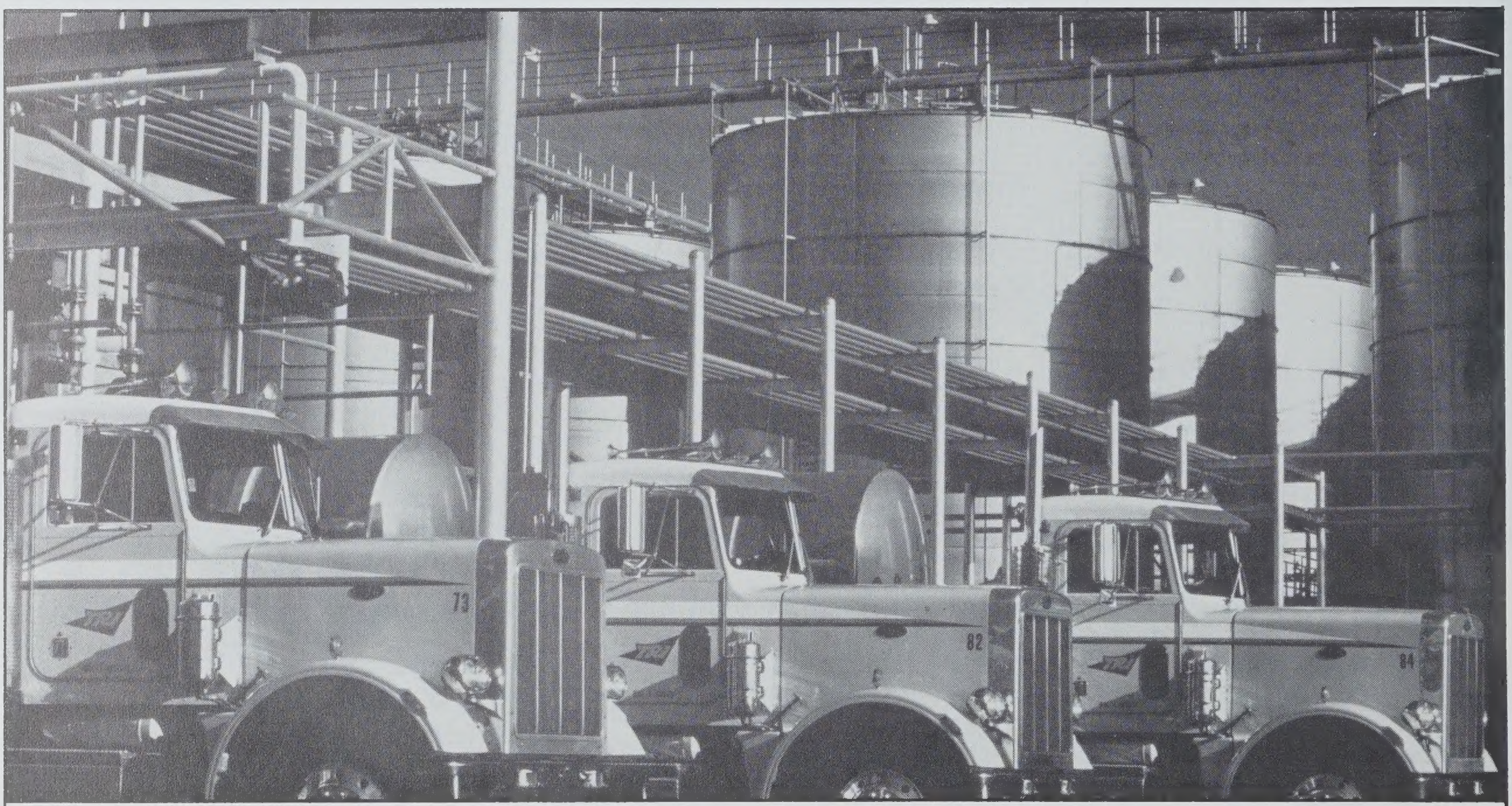
We have discovered that the unique combination of fruit, tannin, and power embodied in GBW wines stimulates two specific, largely undeveloped areas of the brain: the humor medulata and the Jimbo medulla.

The humor medulata controls a person's sense of humor; the Jimbo medulla (dedicated to my employer for his contributions to our research) produces feelings of intense joy. The effects of fruit, tannin, and power (known scientifically as GBW Red) on these brain centers are readily seen in Time For Wine hats, Fortune Corks, the Sonoma Wine Patrol, and the GBW posters you may have seen.

As to my improbable costume and those malicious rumors, both stem from the second stage of our research. We knew that GBW Red stimulates the humor medulata and the Jimbo medulla to good effect in brains already well-developed in these areas, but what effect would it have in those whose humor medulata and Jimbo medulla are retarded or non-existent?

To find the answer, we looked to an area of obvious retardation—the Napa Valley. In a complex, long-term scientific investigation (which proved extremely costly to all of us, especially Jim Bundschu) we made several fascinating discoveries.

Stage one of our program entailed a highly intensive bombardment of the retarded areas with suggestions designed to undermine resistance to the experiment. This was accomplished by two years of continuous praise and fan-



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tastic reviews for GBW wines in publications like The Wine Spectator and *Connoisseur's Guide to California Wine*, and at assorted fairs and judgings.

(I should point out that, for years, GBW has been a wonderful secret shared by ourselves and a few consumers with the confidence and good sense to trust their own palates. One unforeseen consequence of our experiment was that the continuous good publicity created shortages of some varietals. We anticipate that this will be a temporary phenomenon and that GBW will soon revert back to its secret status.)

Stage two of the experiment involved having the subjects consume large quantities of GBW Red. This was facilitated by our donning of clever disguises which enabled us to breach the heavily-guarded border designed to keep riff-raff like us out. Once in Napa, we encouraged the local retards to sample, quaff, ingest, and guzzle as much GBW Red as possible.

Unfortunately, after two years of intensive scientific research, we find our results are troubling. There have been only three instances in which GBW Red has made significant stimulation of the humor medulata or Jimbo medulla evident in Naphonies.

One unqualified success occurred at Frog's Leap Winery. However, we suspect that the folks there are not true Naphonies, which would, of course, negate the results. Second, we did seem to slightly stimulate the humor medulata of Dan Duckhorn, causing him to release a second-label Semillon called Decoy. Obviously, this is feeble success at best. Finally, Robert Mondavi's Jimbo medula was stimulated just enough to cause him to proclaim—and here I quote: "Hmmm, interesting."

There was, I must report, a tragic side-effect from our research. It seems that stimulation of an over-developed humor medulata or Jimbo medula by large amounts of GBW Red, in conjunction with other factors engendering joy and pride, can render a subject completely mute.

The best-known case to date, tragically enough, is that of Jim Bundschu. The pride of 130 consecutive harvests and the anticipated joy of the 130th anniversary celebration interacted with daily consumption of GBW Red to make Jim hopelessly mute. There is a cure, but it requires the victim to drink an entire glass of white Zinfandel. This is a harsh, indeed hideous, curative, so I'm sure we can all understand Jim's decision to remain mute rather than subject himself to such a painful remedy. ■

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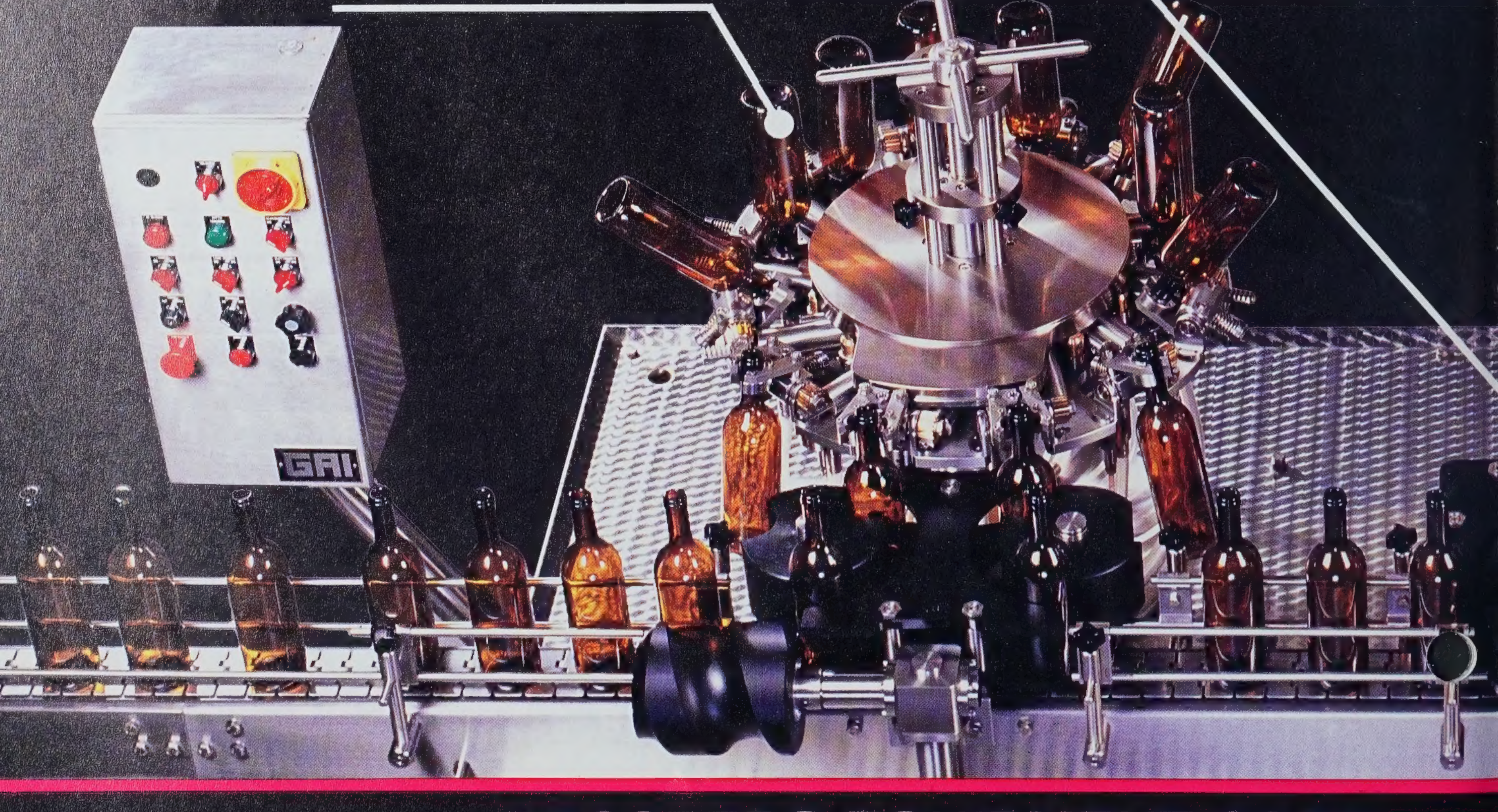

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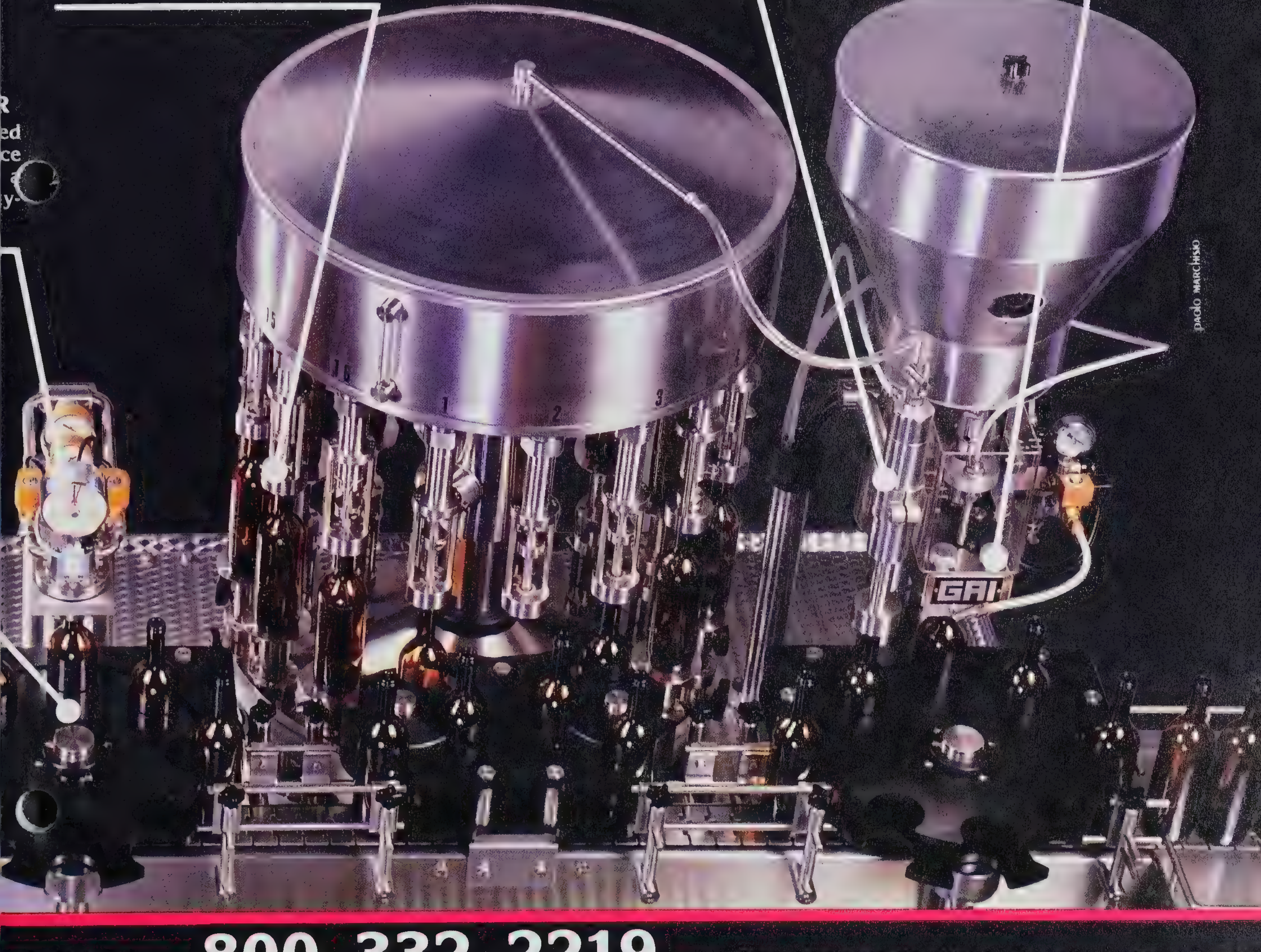

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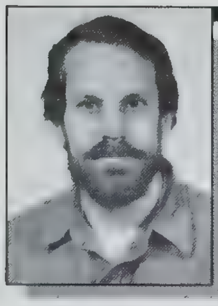

Free Run

Stan Hock

Warning: This Column Contains Bad News

When California voters passed Proposition 65, the Safe Drinking Water and Toxic Enforcement Act, in November 1986, most believed they simply were voting for clean water and protection from environmental toxins. Now that this broad and complicated law finally is being implemented, however, even its most ardent supporters realize they might be getting more than they bargained for.

Prop. 65 authorized Governor George Deukmejian to appoint a Scientific Advisory Panel whose task is to evaluate several hundred chemicals for their possible carcinogenic and/or mutagenic properties. The substances so classified then become subject to a series of stringent regulations designed to minimize their potentially adverse affects on California's citizens.

The regulatory portion of the law, which easily is the most ambitious and far-reaching of any environmental legislation in the U.S., contains two major provisions, both of which apply only to businesses with more than ten employess.

The first forbids such businesses to knowingly release into the state's water supply 'significant' amounts of chemicals which the Scientific Advisory Panel has listed as carcinogens or reproductive toxicants. Violation of this part of the law carries criminal penalties.

The second provision requires that businesses using such chemicals in the workplace, emitting them into the atmosphere, or including them in consumer products must provide "clear and reasonable warnings" to workers, nearby residents and consumers. Failure to do so invites fines of up to $2,500 per day for each chemical exposure.

The law assigns the responsibility for determining how these warnings are to be conveyed to the state of California. As a result, many months of hearings, lobbying efforts and backroom maneuvering preceeded the issuance in February (by the state's Health and Welfare Agency) of interim regulations specifying the obligations of affected manufacturers, retailers, and employers.

Neither the business community nor the environmental lobby that fostered the initiative is happy with the state's implementation. The former considers the regulations—and the law itself—to be onerous, confusing and intrinsically unfair.

Environmentalists (Prop. 65 was coauthored by the Sierra Club and the Environmental Defense Fund) charge that the Deukmejian administration has caved in to the business community by providing temporary exemptions for food products, drugs and cosmetics (provided they are complying with existing federal standards) and by allowing retailers to provide warnings to consumers via newspaper advertisements and a toll-free phone information system.

Wine as Toxin

What are the implications for grape growers, wine producers and retailers? The warning provisions of Prop 65 took effect on February 27 for a short list of 29 chemicals (including pesticides containing arsenic); the rest that have been tagged will become subject to the law by January, 1989 (a chemical becomes subject to the law's warning provisions 12 months after it is listed by the Scientific Advisory Panel).

One of these substances is ethyl alcohol. It was listed as a reproductive toxicant in October, 1987 and soon may also be classified as a carcinogen. Urethane, which appears in wine as a byproduct of fermentation, already has been listed as a carcinogen. Both these chemicals will require warnings to consumers about the health hazards of wine.

The classification of ethyl alcohol as a reproductive toxicant stems from Prop. 65's concept of 'significant risk'. According to the regulations released in February, a chemical poses a significant risk to humans if it causes birth defects at 1,000 times the highest dosage at which there is no observable effect, or if, based on a lifetime's exposure, it produces one additional case of cancer per 100,000 people.

A coalition of consumer and neotemperance groups has pressured the state to mandate on-product health warning labels, claiming they are the most effective way to warn women about the hazards of alcohol consumption during pregnancy. Instead, the state appears to have settled on warning signs as a compromise method of complying with the law's intent.

These signs, which must be displayed wherever alcoholic beverages are sold or served, will likely bear the following message: ***Warning: Drinking Distilled Spirits, Beer, Coolers, Wine, and Other Alcoholic Beverages During Pregnancy Can Cause Birth Defects.***

The California Health and Welfare Agency has specified that the signs must be, "readable and likely to be read." Their lettering must measure at least one square inch, and the word 'Warning' must be centered on the sign in a precise manner. Type face is also specified.

Signs in off-sale outlets and bars must be at least 10" x 10." In restaurants, there must be table signs measuring at least 5" x 5," or else the warning must appear on the menu or wine list. These provisions, which take effect in October, also apply to winery tasting rooms and retail concessions.

Double Jeopardy

A winery's liability under Prop. 65 doesn't end with its commercial products. If a winemaking facility has ten or more employees and utilizes on its premises any of the chemicals listed by the state, it must post warning signs alerting workers and visitors to the chemicals' presence and their hazardous properties.

For instance, if asbestos, benzene, vinyl chloride, or various chromium compounds are present in 'significant amounts' within a winery, signs must be posted. Since all of these were included on the short list of 29 chemicals which became subject to the law in February, a winery that has failed to post warning signs is already in violation of the law.

Field Day For Lawyers

Many of the most controversial features of Prop. 65 will undoubtedly be challenged in court. For instance, determining what constitutes 'significant risk' is the responsibilty of businesses using targeted chemicals, and those businesses assume the burden of proof for demonstrating that a particular chemical does not present such a risk.

Since risk assessments are very costly, this provision could prove to be a tremendous financial burden to businessess that claim their operations or products are risk-free. For example, retailers who fail to post warning signs because they believe wine poses no 'significant risk' to human health might have to prove it at their own expense.

Confusing the issue further is the fact many scientists consider risk assessment to be pure guesswork, a process of extrapolating human susceptibility to toxins from laboratory data of debatable relevance. If large doses of a particular chemical cause cancer in rats and mice (and over 50% of laboratory-tested chemicals do) does that mean long-term exposure to minute doses of that chemical will have the same effect on humans? Frankly, scientists don't know.

Finally, one of Prop 65's most controversial provisions allows any citizen to bring suit against a business which the citizen believes is failing to comply with the law. In the event that a court agrees, the citizen is entitled to keep 25% of any monetary penalties.

This 'bounty hunter' provision raises the specter of a legal feeding-frenzy. Before the warning regulations were even issued, environmental groups held a training conference for lawyers (entitled "Winning under Prop. 65") eager to initiate Prop. 65 litigations. Wineries thus can expect to be sued if their tasting room signs warning of wine's link to birth defects and cancer are not big enough.

Sign of the Times

Spokesmen for the California Wine Institute indicate that a coalition of wine, beer and spirits manufacturers is likely to take responsibility for producing and disseminating the warning signs that will be required in bars, restaurants, wine shops and liquor stores by October 1 (the law vests primary responsibility for the production, placement, and maintenance of warning signs with manufacturers and their distributor, rather than with retailers).

The California Wine Institute has been notifying member wineries of developments in the law's implementation and supplying staff analyses of its likely impact on winery operations.

Proposition 65 ushers in a new era in the history of the California wine industry, an era in which wine will continue to be regarded by some as an essential ingredient of civilized living and will be freshly seen by others as a toxic beverage causing cancer and birth defects.

The future has arrived wearing scary signs. ■

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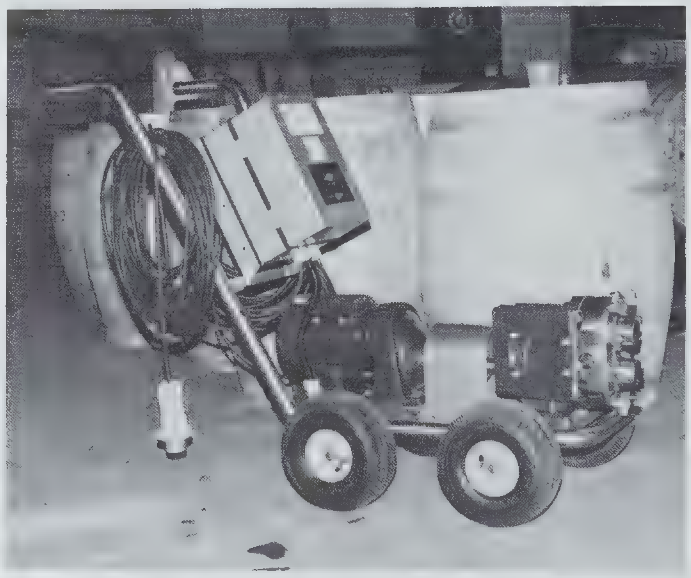

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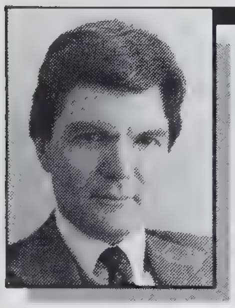

The Wine Lawyer

R. Corbin Houchins

Expansion of the Marketing Area
(Part II)

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In the last column, we looked at the use of so-called national distributors, who often are marketing coordinators / consultants. They in turn appoint local distributors and attempt to manage the resulting winery-distributor relationships much as would the field sales force of a large packaged goods supplier.

Making Agents

Much of the commerce of the nation is conducted by agents.

Corporations can act only through agents. Partners are agents of one another. The need of all but the most determinedly local proprietors to be in more than one place at a time, legally speaking, is normally met by agency.

From the dictionary definition of agent as "one who acts for another" evolves a range of legal subsets, including implied agency, agency by estoppel and agency by operation of law. Discussing them is beyond the scope of this column, but a common characteristic is the power of the agent to commit the party who appoints the agent (the 'principal') in dealings with third parties. The principal is thus said to incur vicarious liability for the acts of the agent.

(Incidentally, do not confuse the concept of private agency, which is one party acting as agent for another, with that of public agency, which is the means by which executive departments and bureaus regulate things in the name of the state or nation.)

Obviously, it is very important to know whether you are creating an agency and to specify its terms. I have seen many contracts containing boilerplate statements that the relationship was not an agency, when it clearly was and would be so treated by any court ruling on a dispute over the issue. Less often, one finds a contract which purports to appoint an agent, but in fact creates some other relationship.

Liquor Laws

We will assume that you and your legal advisers have decided that a primary distributor appointed to give you wider distribution will be your agent for some purposes—probably for qualifying your products to be shipped into other states and possibly for locating and appointing local wholesalers to distribute them.

In addition to the normal legal checklist of considerations, wineries must consider the implications of official registrations by and of the agent. For example, a state requiring brand registration may treat the party in whose name the registration was made as the brand owner or primary supplier.

For wine imported from abroad, it is not uncommon for a stateside importer to represent a number of producers and for the regulators to recognize that company as the sole party entitled to effect changes in labels, prices, or product specifications.

Typically, state alcoholic beverage control laws treat imported wine as a class, whether it is imported from California or from Bulgaria. If your multistate marketing agent or primary distributor acts as your importer in various states, who is in control of the brand registrations and postings? Was the registrant 'XYZ Winery by Joe Faithful, agent' or 'Faithful Imports?' What happens to continuity of brand registrations if you and Joe part ways? (Who absorbs the cost of such registrations will also be a significant issue in any negotiated agreement.)

In some jurisdictions, registration of the agent himself raises an issue. If a state requires the shipping winery to register a single resident representative and will deal with the brands only through that party, you had better understand in advance what the requirements are for changing representatives. It is prudent to get a letter of resignation from the agent contingent on termination of the agency contract, before appointment in such a jurisdiction.

Before leaving the topic of agency, I should note that conduct of parties can create vicarious liability even if the written agreement does not create an agency. Be sure your legal advisers consider how your proposed business practices relate to the concepts of apparent authority and other forms of de facto agency that can be created inadvertently.

There is much more that can be said about making and unmaking agencies, but let's turn now to one of the potentially troubling things an agent can do during the time an agency exists or appears to exist.

Proxy Marriages

We considered the subject of divorcing a distributor in an earlier column.

A new wrinkle raised by the national broker or distributor concept arises from the fact that such a business may, at least

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in some jurisdictions, act as an agent of the winery to appoint local wholesalers. Therefore, we must look not only at the primary distribution relationship, but also at whatever proxy marriages you may find yourself party to.

How can you find yourself obligated to sell to a customer you have never met? Acts of an agent are in most circumstances attributable to the party who hired him, even when they are contrary to instructions. The upshot is that your national distributor can grant a local wholesaler the right, not merely to do business with the national distributor, but to purchase directly from you.

As in most relationships, it matters little what the underlying pattern of rights and obligations is, as long as everyone is happy.

What happens, however, if you end your relationship with the national outfit and decide to appoint your own distributor in the market?

The answer depends upon the state law governing contracts between wine suppliers and wholesalers. If such agreements are treated under the general law of contracts, a key issue will be the representations made by your agent to the local wholesaler regarding length of term and circumstances under which termination is possible. In the absence of any specific understandings, local law may impose a 'reasonable' duration on the agreement.

Shotguns

If the contractual relationship is governed by special interest legislation protecting distributors, the problem is more acute.

One hears much of 'franchise' states (a misnomer which raises my hackles), where special interest legislation writes into a distribution agreement terms which the winery would not accept if it had a choice. Such statutes sport various self-laudatory titles, such as 'equity' or 'antidiscrimination' acts, but their purposes are clear enough—to require a winery which begins selling its product to a wholesale customer to continue filling orders from that customer whether it wishes to or not, and in some cases to prevent it from selling to anyone else in that market.

Risk Management

The way to manage the risk is to make sure that sufficient controls exist in the agreement with the national distributor, so that you at least participate in deciding which states will be opened, who will sell your products there, and what the terms of the appointment will be.

On the last point, one approach is to have a form of agreement between the national and local distributors be part of your agreement with the national distributor. The form may specify a supplier-wholesaler relationship between the national distributor and the local distributor, contingent on the continuation of the relationship between the national distributor and his source of supply, without including the source (you) as a party.

Looked at from another angle, it may be useful to specify that the relationship between the national and local distributors is not property of the national distributor, and to obligate the latter to cooperate in substituting you or a party designated by you for itself upon expiration or termination of the national distribution agreement.

In short, there are trade-offs between avoiding proxy marriages to local distributors on one hand, and insuring continued benefits of relationships with good local houses in the event your relationship with a national distributor ends on the other.

The important message is that this is an area in which you and your legal advisers need to engage in careful planning and effective negotiation, maintaining the willingness to call off a deal with an attractive prospective national distributor if the legal risks look too great. ■

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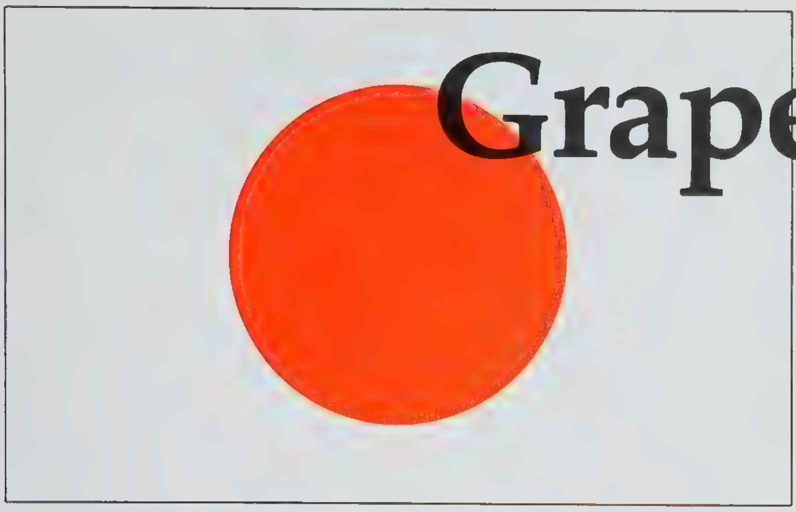
Grapes and Wines in Japan



Robert E. House

Grapes are grown in all but one of 47 prefectures (political districts) in Japan. Yamanashi prefecture, 85 kilometers west of Tokyo, is the major source of Japanese-grown wine grapes. Over 90 of Japan's 300-plus wineries are located in Yamanashi.

Yamanashi vineyards are located on the plains and hillsides of the Kofu Basin, one of many small alluvial fans found in valleys between the mountains of central Honshu Island's Chubu district. Hills rise abruptly up to 1,800 feet above the valley floor and distant peaks exceed 10,000 feet.

Mt. Fuji is visible from most northern portions of the basin. The Kofu Basin is about half the size of the Napa Valley appellation, with half (12,500 acres) of Napa's vineyard area. The patchwork of vineyards is interspersed with small towns and fruit orchards.

History

Winemaking has been practiced to some degree in Japan as far back as the early 8th century. Vineyards have existed in the Kofu Basin since the late 12th century. The closure of Japan to foreigners and foreign goods from the 17th to the mid-19th century only slightly stimulated the native wine industry.

The opening of Japan and the Meiji Restoration in the late 19th century encouraged the importation of western culture. The Meiji government briefly encouraged development of the Japanese winegrape industry for several reasons:

1) To provide gainful employment for indigent Samurai.
2) As part of the process embracing western culture.
3) To decrease the diversion of rice to sake (rice wine) production.

Many European grape varieties were introduced into Japan during this time, but most were not well-suited to the Japanese summer climate. The European varieties which did survive the climate were devastated by phylloxera in 1907. About 1910, the wine industry, primarily small companies (neighborhood cooperatives) selling wine direct to consumers, settled into the production of dessert-style sweet wines on a small scale.

JAPANESE VINIFY AMERICAN GRAPES

Per capita wine consumption in Japan remains miniscule (0.6 liter/year), and most purchases are of popularly-priced brands. Yet, the major Japanese wine companies—Suntory, Sapporo, Sumitomo, Sanraku, Mitsubishi—are bullish about the prospects for growth in Japan's small premium wine market.

As a result, these companies are energetically increasing their participation in the international wine trade. Japan has long been a major importer of bulk wine from Western Europe, but the big wine companies now are importing and marketing increasing amounts of bottled wine from Germany, France, Italy, Australia and the U.S. In addition, the Japanese have of late become deeply involved in the California wine industry.

Since 1984, Japanese companies have purchased four well-known California wineries: Chateau St. Jean, Kenwood, CA. (Suntory in 1984); Ridge Vineyards, Cupertino, CA. (Otsuka in 1986); St. Clement Vineyards, St. Helena, CA. (Sapporo in 1987); and Markham Vineyards, St. Helena, CA. (Sanraku in 1987). In addition, Suntory has for many years been a part-owner of Firestone Vineyards, Los Olivos, Ca.

Wineries are not all that the Japanese are buying in California, however. In ever-increasing quantities, they are purchasing fresh grapes for shipment to, and vinification at, Japanese wineries. These imported grapes are used for blending with indigenous Japanese varieties.

PWV has learned that, in 1987, well over 1000 tons of California wine grapes were purchased by Japanese concerns for shipment to Japan. Although over 50% of these came from vineyards in the Central Valley, several hundred tons were from premium vineyards in north coast counties, including Chardonnay, Pinot noir and Cabernet Sauvignon grapes from prime Sonoma County vineyards.

Grapes purchased in California—as well as at least 150 tons acquired from vineyards in Washington State—found their way to roughly a dozen Japanese wineries.

Technology developed by the California table grape industry has been successfully adapted to shipment of fresh wine grapes to Japan. Grapes are hand-harvested (with shears rather than knives) and carefully packed into 30-lb boxes, which then are palletized, banded and shipped to cold storage facilities. There they are quickly chilled down to below 40°F and loaded into refrigerated containers which are gassed with SO_2. The journey by ship to Japan takes 10 to 14 days. Thus, no more than three weeks elapses between harvest in California and crushing at Japanese wineries.

Despite the obvious expense involved, importing fresh grapes can actually be less costly for Japanese wineries than bringing in juice or bottled wine, both of which are subject to much higher duties.

Michael Rowan, with Lyeth Vineyards, Geyserville, CA, and a consultant to California companies brokering grape purchases to the Japanese, says, "It's not entirely off-the-wall. Vinifera doesn't grow any better in Japan than in South Carolina. Given their duty structure, they can produce competitively-priced products doing it this way." Rowan also is impressed with the knowledge of the Japanese. "They understand the regional characteristics of the different varieties," he says. "They've obviously done a lot of research."

In 1964, the Tokyo Olympics expanded the Japanese consumers' awareness of western-style wines, resulting in an increased interest in wine and a shift in taste toward table wines. The small Japanese wine industry responded by increasing its capacity and modernizing its facilities. Large-scale wineries were started by major sake and beer producers, whiskey distillers, and a soy sauce manufacturer. Only two of today's major producers were in business before World War II.

In the Vineyards

Most of the European cultivars, including Chardonnay, Cabernet Sauvignon, Cabernet Franc, Merlot, Riesling, Sauvignon Blanc, Semillon, and 18 other *vinifera* varieties now grown in Japan were introduced after 1960. Five non-European varieties comprise 90% of Japan's winegrape vineyards. The American *labrusca* variety Delaware is the most widely-planted. A *labrusca* hybrid red grape, Campbell's Early, is also widely grown.

Another heavily-planted cultivar is Koshu. Opinions as to its origin differ, but the Japanese consensus is that it is a pink *V. vinifera L.* proles orientalis variety from the Caspian Sea introduced via the 'silk road' (China) about 800 years ago.

In 1981, approximately 184,000 metric tons of Delaware, Koshu, and Campbell's Early were harvested. (60% of total harvest) Two new strains of Muscat, Neo Muscat and Bailey-A (a cross of Bailey and Muscat Hamburg) are also planted extensively.

The humidity ranges between 66% to 79% from spring to autumn. Temperatures in the Kofu Basin are cooler than Tokyo or Kyoto; average temperature in July is 25.7°C (77.7°F). There are frequent rains from early June to mid-July during flowering. The climate, acknowledged as the best for grapegrowing in Japan, is less than optimal. Soil in the Kofu Basin is mostly gravel and sand, with good drainage.

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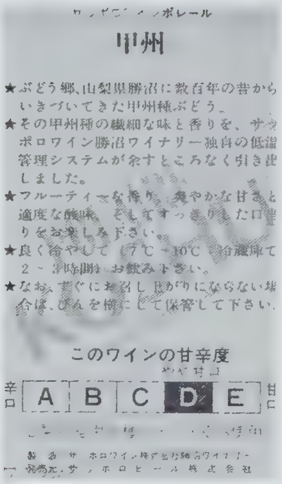

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A	**dry:**	up to 0.4 gr/100 ml.
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D	**med. sweet:**	2.5–5
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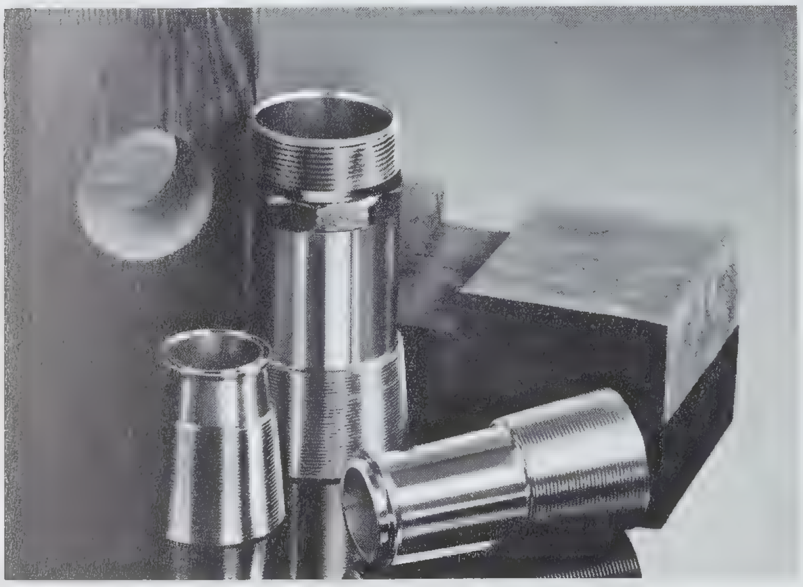
These categories vary depending on acid content; for instance a wine with 0.9 residual sugar and 0.7 acid might be classified as dry; one with 1.8 r.s. and 0.8 acid might be semi-dry even though sugar content alone places them in sweeter categories.

Plantings in the Kofu Basin consist of 70% white grapes and 30% red. Only 10% of the wine grape plantings are *vinifera* grapes. Table grapes occupied 70% of the basin's vineyards in 1981.

In the UC Davis degree day system, the area is classified as a region III, with bud break in mid-April, flowering in mid-June, and harvest in October after a short September rainy season. Also in September, vineyards may be hit by a hurricane-type storm known as 'taifu', which can cut the crop considerably. Pruning is done between December and March. Average winter rainfall (between November and March) is 208mm (8.2 inches); the annual rainfall average is 1100mm (43.3 inches).

The vineyards are arbor-supported with vines five meters



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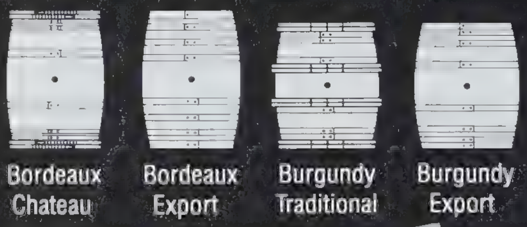

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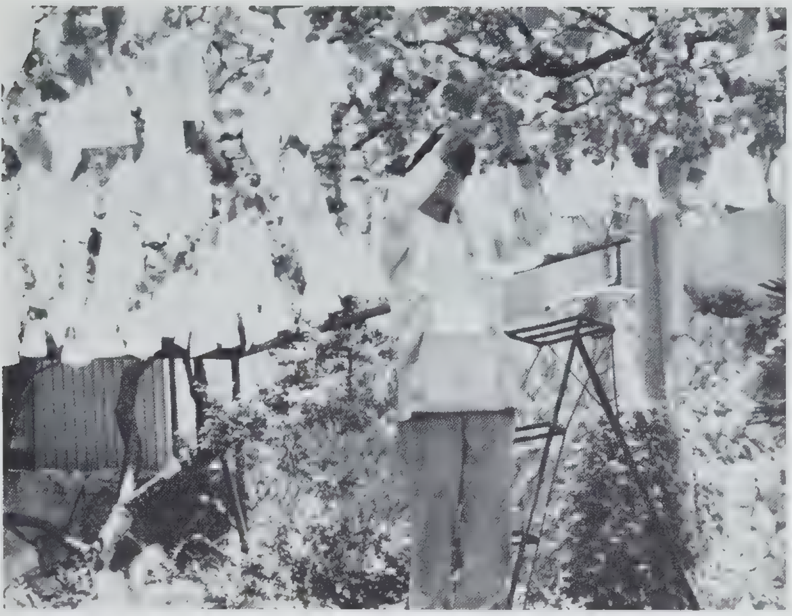

Photos by Warren Warnoski

Cotton fabric bags are put on grape clusters right after flowering and remain until harvest. The bags protect against insects and birds.

apart and trellises five to six feet aboveground. Vineyards must be sprayed frequently to counteract mildew and oidium. Phylloxera is present, so nonresistant varieties must be grafted onto resistant rootstock.

The eight rootstocks used are: Riparia x Rupestris 3309C; Berlandieri x Riparia 5BB; 125AA; 5C; SO4; 8B; Berlandieri x Rupestris Richter 99; Richter 110.

Irrigation is not necessary, and frost protection systems are rare. There is little mechanization of vineyard operations. In many vineyards, growers place wax paper or plastic caps or cones over the top of grape bunches to protect them.

At harvest, grapes are hand-picked into 20-kg plastic baskets. Yields range from four–six tons/acre. Despite warm summer temperatures, grapes are picked with sugar contents ranging from 16° Brix (a poor year) to 20° Brix (a good year). Even in a good year, chaptalization is necessary. Koshu sometimes requires acid adjustment. Some of the other varieties require deacidification.

One reason why sugar levels are low is that about 70% of all Japanese vineyards have virus diseases, and 60% of all vineyards are affected by leaf-roll virus. In the last ten years, Manns Wine Co., a sister company to Kikkoman Ltd, has succeeded in producing virus-free domestic varieties by the meristem-tip culture method. In the experimental virus-free vineyards, sugars reach 20° to 23° Brix regularly. Some growers have already started to replant.

While the sugar content of most Japanese grapes may not be impressive, the prices paid for them are. Grape prices are determined by sugar content–base price of the Koshu grape variety is 205 yen/kg at 15° Brix. Typical prices are 200 to 300 yen/kg which, at May 1986 exchange rates, equated to $1,089–$1,633/ton.

The high cost is primarily due to a winegrape shortage, which results from the climate, the limited availability of suitable land, and demand for table grapes. There are less than 74,000 acres of vineyards in Japan. The annual Japanese winegrape harvest is over 20,000 tons.

High costs are also due to expensive trellising methods, labor-intensive viticultural practices dictated by vineyard topography, culture, climate (including the need for frequent spraying), and the small-scale vineyard operations. In 1978, between 1,200 and 1,600 households in the town of Katsunuma were engaged in viticulture. Since most wineries have to buy grapes

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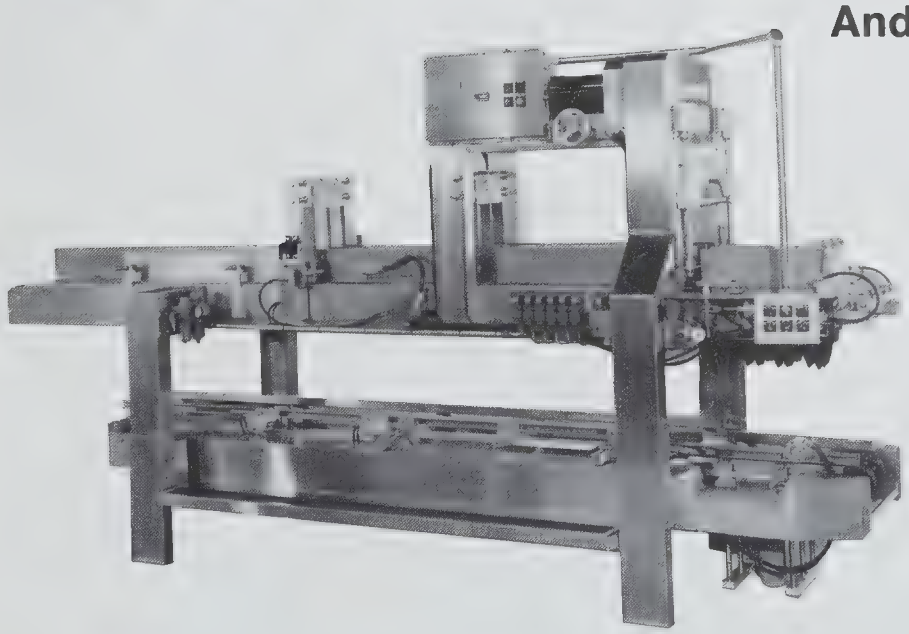

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from growers, the winery association makes a contract with the grapegrower association to maintain a fair price.

In the Wineries

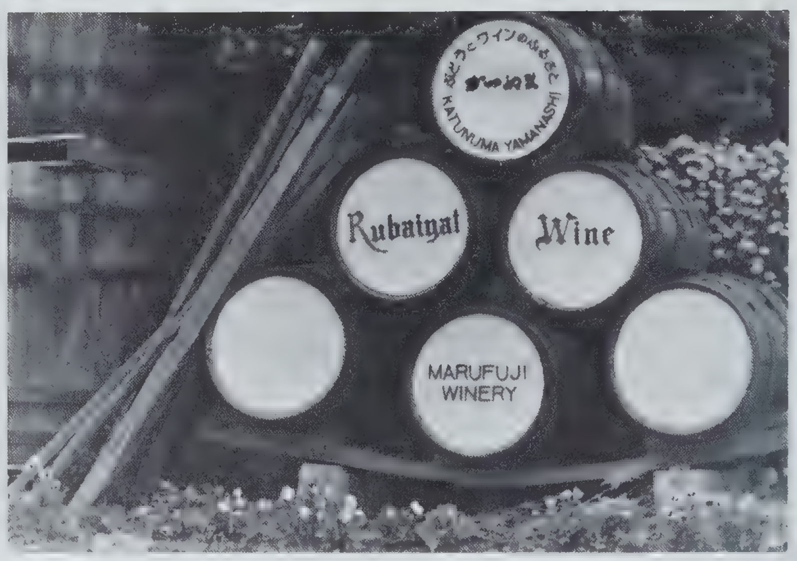
While U.S. viticulturists might find some of the grape varieties and viticultural techniques surprising, unusual, or just plain different, a U.S. winemaker stepping into a Japanese winery would feel right at home. Traditional European vinification methods and equipment are combined with state-of-the-art methods and high-tech equipment.

If it weren't for the Japanese printing on boxes and labels, it could be California, Oregon, or New York. While the smallest winery in Japan may still use a small vertical basket press, almost everyone else has new Vaslin, Bucher, or Howard presses.

In fact, touring a dozen Japanese wineries is the next best thing to attending a major winemaking equipment trade show. Everything is there: stainless-steel dejuicing and fermentation tanks, glycol cooling jackets, mobile heat exchanger units, reverse osmosis units, centrifuges, and French oak barrels. There is hot bottling, cold bottling, vacuum bottling, inert gas headspacing of storage tanks and of filled bottles, and computer-controlled processing.

From discussions with the French-, U.S.-, and locally-trained (Yamanashi University) enologists and owners, it was obvious that they read the books U.S. winemakers read. Skin contact is not just a subject for erotic discussions, and killer yeasts reside at Japanese wineries, not in monster movies.

The winery owners and staff proudly display their equipment and freely discuss their winemaking techniques. The overriding influence is French (a historical consequence), but they are receptive to quality equipment and innovative methods from anywhere.



While most of the winemaking equipment is imported, many wineries use glass-lined steel fermentation and holding tanks which are spinoffs from the sake-brewing industry. The widely-planted Neo Muscat for table grapes and Muscat Bailey-A for table grapes and red wine are the result of Japanese breeding efforts. Sainte Neige Winery (whose parent organization is a pharmaceutical company) uses its own genetically-engineered cultivars better-suited to the Japanese climate.

Sapporo Wines Co., a sister company to Sapporo Breweries, Ltd., was the first Japanese winery to use low-temperature fermentation for wine production. This method, which can increase aromas, flavor, freshness, and fruitiness, was initially used by Sapporo Breweries in beer-making, and many Japanese wineries have adopted this technique.

Although there is a tendency to think of the Japanese as hav-

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ing a homogenous mindset, not all of the wineries march to the same drummer. About the time I began to believe that Japanese barrel-aged wines never saw new oak, the enologist at Mercian Wine Company stated that the winery replaces 25% of their Limousin-oak barrels every two or three years.

Almost all other wineries feel that the Japanese palate is not receptive to strong wood flavor in wine. Maruki Winery, which does not wood-age its wines, plans to use a reverse osmosis apparatus to concentrate non-chaptalized wines (for reserve bottlings).

While Maruki does not put its Muscat Bailey-A through malolactic fermentation, Sainte Neige used carbonic maceration followed by malolactic fermentation to make a 100% Muscat Bailey-A wine. Another unusual program of Sainte Neige is the ageing of wine in 1.8-liter bottles (standard sake-bottle size) for one to seven years before blending the wine and rebottling for release. It is the only Japanese winery using the Seibel 9110 French hybrid.

Most Japanese winemakers scoff at the idea of trying to produce a late-harvest, *Botrytis*-affected wine in Japan. Suntory's Yamanashi Winery produced such wines in 1975, 1976, and 1978. Mercian's 1984 Koshu Sur Lie is a 100% Koshu wine which was left on its lees for six months.

Maruki's 1979 Late Harvest 100% Koshu successfully challenges the generally-accepted theory that Koshu wines do not age well. When tasted in 1986, this wine had a brilliant, colorless appearance, light body, a clean nose reminiscent of Chenin Blanc, and soft, delicate flavors.

While most medium- to large-sized wineries are importing bulk wines and musts from France, Germany, Australia, Chile, and the U.S. to increase production, Maruki sells half its wines (all made from Kofu Basin grapes) in bulk to other Japanese wineries.

Sapporo Wines brought in and crushed 1985 Napa Valley Cabernet Sauvignon grapes at its Yamanashi winery. The grapes were chilled, sulfited, and transported in a refrigerated container by ship from Napa to Yamanashi, a voyage of under two weeks. The result is a light, but varietally-correct Cabernet Sauvignon. Other wineries are now following suit; several purchased 1986 musts for experiments. Generally, most imported bulk wines are better quality and cheaper than wines made from domestic grapes.

The wineries do share some common attitudes and practices. They perceive the average Japanese consumer as having a preference for sweet wines. Thus, most Japanese-produced wines have some discernible sweetness. Given the ranges of sweetness and body encountered, the back labels of many Japanese wine include horizontal scales with three to six divisions to indicate the wine's sweetness. The appropriate block of the scale is filled in to aid consumers in selecting wines more to their liking.

Nearly all Japanese winemakers are convinced that, probably as a result of drinking sake, Japanese consumers are only satisfied with wines which are star-bright in appearance. Therefore, the winemakers pay a great deal of attention to tartrate and protein stability in their wines.

Nouveau wines are popular in Japan. The Japanese eagerly await the first product of the season, and are willing to pay a little more for it. The first Japanese nouveau wine was produced from Koshu grapes by Manns Wine Co. in 1982. Japanese nouveau wines, produced primarily from Koshu and Muscat Bailey-A, are generally released three weeks before the French Beaujolais Nouveau. In 1986, about 150,000 cases of Japanese nouveau wines were produced, and over 50,000 cases of Beaujolais Nouveau were imported. ■

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HESS
COLLECTION

A Winery of Many Arts

Stan Hock

Swiss industrialist Donald Hess has a passion for modern art—not only painting and sculpture, but the art involved in transforming California mountain grapes into world-class wines of elegance and finesse. On Mt. Veeder in Napa Valley, CA, Hess is translating these diverse enthusiasms into a stunning viticultural, enological, and artistic showplace.

A Mountain Vineyard Empire

Hess Vineyards and Hess Collection Winery began ten years ago, when Donald Hess purchased a 500-acre parcel of vineyard land (Veeder Hills) on the steep, rugged slopes of Mt. Veeder in western Napa Valley.

In the next several years, Hess purchased two more large, parcels—the Benkiser Ranch in 1979 (renamed Veeder Summit) and a portion of the former Veedercrest Vineyard (renamed Vintage) in 1982. In 1986, Hess acquired a 50-year lease on a 40-acre parcel, which included the Mont La Salle Winery, a facility owned and utilized by the Christian Brothers from 1931 through the early 1980's.

These acquisitions gave Hess roughly 900 acres of land on Mt. Veeder in the Mayacamas mountains. In 1978, only 56 of these acres had been planted (to Cabernet Sauvignon in 1973). Today, Hess has 280 acres planted to vines on these sites, with another 160 acres slated for future cultivation.

Cabernet Sauvignon (108 acres), Merlot (30 acres), and Cabernet Franc (15 acres) are planted on westerly and south-facing slopes. Chardonnay (127 acres) is planted primarily on northerly and east-facing slopes. Small plantings of Petite Verdot and Malbec were completed in the winter of 1988-89.

Hess Vineyards sells slightly over 50% of its Chardonnay grapes (a total of 330 tons were harvested in 1987) and 25% of its red grapes (140 tons in 1987) to other wineries, including Duckhorn, Girard, St. Clement, Domaine Chandon, and Domaine Mumm.

Diverse Soils and Microclimates

The Hess Vineyards range in elevation from 600 to 2,000 feet, and encompass a wide variety of soil types and microclimates. Still, two basic factors determine the character and quality of Mt. Veeder grapes and, by extension, the wines made from them.

First, given its location in the southern part of the Mayacamas Range, Mt. Veeder's vineyards benefit from the cooling breezes of San Francisco Bay and the Pacific Ocean. This insures moderate ambient daytime temperatures (high Region I—low to mid-Region II).

Second, both the clay loam soils in the lower vineyards and the rockier, redder, more volcanic soils in the upper ranches are very well-drained. This means that little water is retained in the soil, so berry size is small, with high juice/skin ratios. Yields are low, averaging two to three tons/acre.

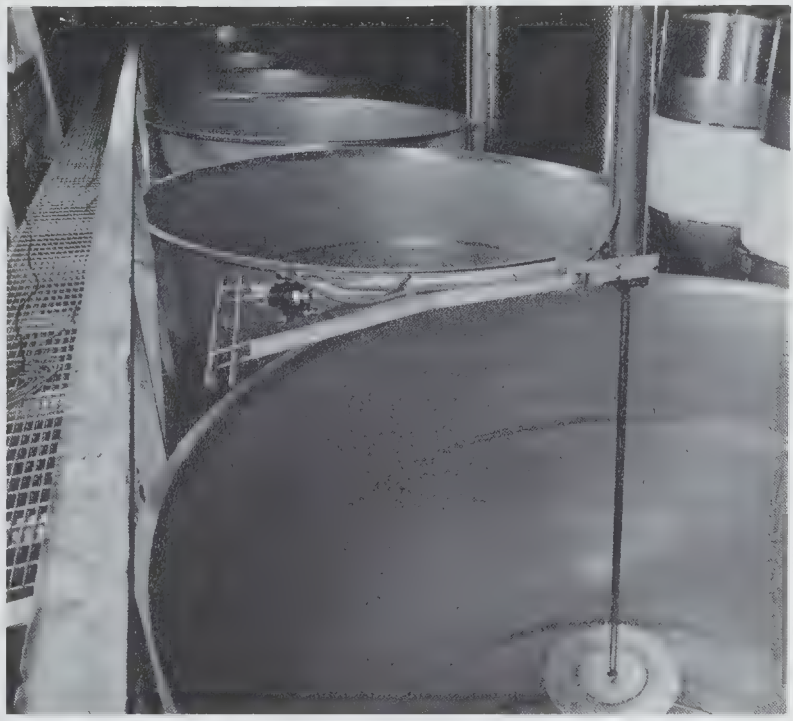


Photo by Richard Warton

Long row of open top fermenters with hydraulic ram over head for punching down the cap.

Despite substantial annual rainfall (averaging over 40 inches and reaching as high as 80), drip irrigation is used throughout the vineyards. "Water management in the mountains is critical," says Robert Craig, General Manager of Hess Collection Winery and a key figure in the vineyards' development. "You get much better grape quality by avoiding premature water stress."

A Neutron probe is used to measure soil moisture throughout the growing season. Craig notes that water is cut off a month prior to harvest for red varieties, two weeks prior to picking Chardonnay. Growing season watering totals range from 40 gallons to 130 gallons, depending on variety, age of vines, and soil type.

Other cultural practices vary by vineyard site as well. Although overly vigorous growth is rarely a problem in the mountains, there is experimentation at Hess Vineyards with leaf removal and trellising. Most vines are cordon-pruned, but the oldest Cabernet vines are cane-pruned.

Because microclimatic conditions vary from site to site, as a function of exposure, elevation, and wind patterns, four weather stations are in strategic positions throughout the different vineyards to monitor wind velocity, solar radiation, and temperatures above and beneath the leaf canopy and in the soil.

These stations record data hourly on cassettes, and a software program designed for Domaine Chandon then 'reads' the information into the memory of an Apple computer. Craig says that the data gathered by the weather stations has influenced decisions about where to plant certain varietals.

The realization, confirmed by weather station data, that Hess Vineyards really is a collection of many smaller vineyards, led to the systematic demarcation of the 186-acre Veeder Hills vineyard. This parcel has been divided into 92 separate blocks, each possessing a different mix of variety, vine age, soil type, and exposure. Combinations of these blocks are harvested and processed separately.

Experimentation of a different sort is occurring in another 56-acre plot of 4th-leaf Cabernet, Merlot, and Cabernet Franc vines. Here, Donald Hess' concerns about ecology have been translated into an experiment in natural farming.

Sulfur dust is used, but no herbicides or pesticides. Hoeing and weeding are done by hand. In 1987, when this upper vineyard block suffered a spider mite infestation, an organic solution was sought. Predator mites on bean plants were set out among the vines to counteract the infestation.

Fourteen contiguous acres will be added to the 56 acres already being naturally farmed. The long-range objective is to extend these practices to as great a portion of the vineyards as is feasible.

Small-Lot Fermentations

Dividing a vineyard into harvest blocks facilitates small-lot fermentations, the linchpin of winemaker Randle Johnson's winemaking philosophy. These small lots reflect the vineyard's variations and allow Johnson to rely on blending to achieve the style and complexity he aims for.

Mountain grapes present significant winemaking challenges, both for white and red wine vinification. This is especially true for a winery like Hess Collection, which aims to produce wines that are intensely-flavored, yet enjoyable to drink upon release. Thus, Johnson has devised creative strategies for both Chardonnay and Cabernet Sauvignon vinification.

"With mountain Chardonnay, you must use winemaking techniques that bring out forward fruit aromas and broaden the middle palate," Johnson explains. "Mountain Chardonnays tend to be more tightly constructed—they have great structure, but can take longer for the nose to fully develop.

"On the other hand, we get what we want from the finish of the wine—it shines naturally. The finish is long and clean and crisp. And there's no question that mountain Chardonnay has great ageability."

Johnson began producing experimental lots of wine for Hess in 1983. He determined the best winemaking regimen for the estate Chardonnay only after several years of trials comparing tank and barrel fermentation, different yeast strains, the effects of varying degrees of malolactic fermentation, and the benefits of different oak types. In a *sur lie* program, Johnson studied wines left for different periods of time on both stirred and non-stirred lees.

"We achieved better fruit with tank fermentation, but a better middle palate with barrel fermentation," Johnson reports, "so now we tank-ferment ⅓ of the juice and do barrel-fermentation with *sur lie* on the balance. We enhance the fruit aromas by using Prise d' Mousse yeast, and we put 25% to 35% of the blend through malolactic fermentation to broaden the mid-palate and add complexity. That helps the aromas too."

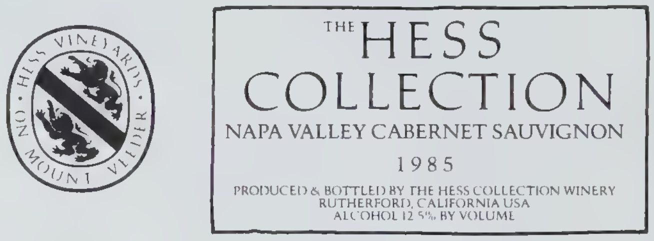
In 1986, the winery purchased Chardonnay fruit from the Carneros district, and this lot, one of 17 that went into the final blend, comprises about a third of the 1986 Hess Collection Winery Chardonnay, its first commercial Chardonnay release.

At a recent tasting, this wine displayed both the toasty, buttery aromas and entry flavors associated with barrel and malolactic fermentation and the taut, slightly spicy, underlying fruit typical of mountain Chardonnay.

Johnson feels that the Carneros fruit, and some he has obtained from the Oak Knoll region of Napa Valley (possibly 10% to 15% of the 1987 blend), enhance early development of the aromatics and mid-palate fruitiness. Thus, Hess Collection Chardonnays, beginning in 1987, will be blends of roughly 65% estate grapes and 35% valley floor and Carneros grapes.

Johnson also is looking at clonal selection as another potential blending tool. Although 95% of Hess Chardonnay plantings are from the Wente clone, there are two-acre experimental plots of both the Spring Mountain clone, which has a spicy, muscatty quality, and a selection from it propagated by a Sonoma grower named Reud.

Johnson has been impressed by the quality of the wine these two have produced and plans to plant more of both. "They definitely add to the early aroma development," Johnson says. "There is a good chance that, with these two, we will soon be able to make a Reserve Chardonnay from only estate grapes."



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Power and Finesse

With Hess Collection Cabernet Sauvignon, Johnson's challenge is to produce a wine of elegance and early drinkability, while retaining the tannic structure and mountain fruit intensity that usually guarantee a decade or more of ageing. "It's a fine balance," he admits with a smile.

Johnson's approach to the problem is to ferment in small lots and to employ gentle cap management in order to minimize the extraction of harsh tannins. Having worked with mountain fruit for over a decade—both as winemaker at Mayacamas Vineyards in the late 1970's and as proprietor of his own label, Calafia Cellars—Johnson is well aware that the small berries produced by mountain vines can yield wines with hard, astringent tannins. Experience, he says, has taught him that cap management is the key to controlling them.

"We ferment in open-top fermenters, in 13-ton and—starting in 1988—16-ton lots. This allows a convenient 1-1 ratio of height and width: 8′x8′ for the 13-ton lots, 8′x10′ for the 16-ton lots. The high ratio of cap surface to volume of liquid allows a more natural, gentle extraction of tannins."

A hydraulic punch-down device effects a gentle submersion of the cap three times a day, extracting softer, rounder tannins while leaving harsher phenolic compounds trapped in the skins. This method also limits heat transfer from the cap to the fermenting juice, insuring that the high-toned spice and berry

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aromatics characteristic of Mt. Veeder grapes are not burned off.

Johnson is 'keenly interested' in the concept of extended maceration as a way to further the process of softening tannins, but he says that work done by Bill Dyer, winemaker at Sterling Vineyards, has strongly suggested that maceration doesn't work well with mountain fruit.

Hess Collection Cabernets, beginning with the first two commercial releases from 1983, display aromas of ripe black cherry and currant, with pronounced scents of black pepper, wild herbs, and cocoa. Small amounts of Merlot and Cabernet Franc (and Petite Verdot and Malbec in the future) are blended in for complexity. At a recent tasting, the 1984 and 1985 bottlings were particularly impressive, wines with deep, full fruit and moderate tannins.

In most vintages, Johnson blends portions of the top lots (as with the Chardonnay, Hess Collection Cabernets are blends of 15 to 20 different lots of wine) to create a 'Reserve' bottling. These are designated with a dark blue label, as opposed to the white label used for regular bottlings.

A Showcase for Wine and Art

Donald Hess is sparing no expense to provide Randle Johnson with the space and equipment he needs to implement his winemaking practices. He is also making sure that visitors to the winery have an aesthetically pleasing experience.

On the ground floor of the original stone winery building, built in 1903 by Theodore Geir, a 5,000 square foot barrel chai is under construction. Adjacent to this will be a 3,500 sq. ft. visitor's center and tasting room, which will afford a view into the chai.

A renovated 13,000 sq. ft. fermentation room and an existing 6,000 sq. ft. storage facility (the winery currently stores wine for four other wineries) complete the facilities on the ground level.

An elevator will take visitors from the first floor reception area to a similar space on the second floor from which they may look down into the fermentation room and barrel chai. In a small theater they will view a 10-minute film describing the Hess Vineyards and the winemaking practices that turn its grapes into wine.

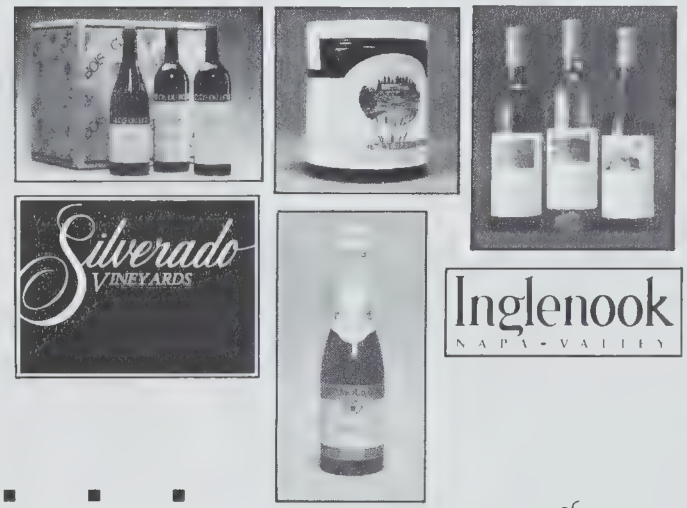
After the film, visitors will be welcomed into the first of two exhibition galleries, totalling 13,000 sq. ft,, which will house Donald Hess' collection of modern European and American paintings and sculptures. The second level also has space for additional tank storage.

Another 8,000 sq. ft. exhibition space will be on the third level of the complex, and this will feature the works of contemporary California artists, as well as the balance of the permanent collection. This level also contains the bottling room and laboratory (4,000 sq. ft.), two crushing and pressing stations (2,000 sq. feet), and 10,000 sq. ft. of space for case goods storage.

An adjacent building, separated from the winery/art museum complex by what will be a large, open-air courtyard, will be refurbished to provide office space and hospitality and dining facilities. Total cost for the entire renovation project is estimated at over $5 million, including a total re-equipping of the winery and gallery space for the art.

The Hess Collection Winery anticipates ultimate production of 50,000 cases. A 1983 Cabernet Sauvignon ($13.50) has been released. In June, the first 1986 Chardonnay ($12.75) and 1983 Reserve Cabernet Sauvignon ($22.50) will be released.

According to Elizabeth Pressler, Director of Marketing, Hess Collection Winery's grand opening will occur in spring, 1989. However, the new facility may actually open to the public by November 1, 1988. Thus, connoisseurs from two worlds will soon be able to gaze upon the beauty of the Hess Collection, a marriage of art and wine and mountain vine. ■



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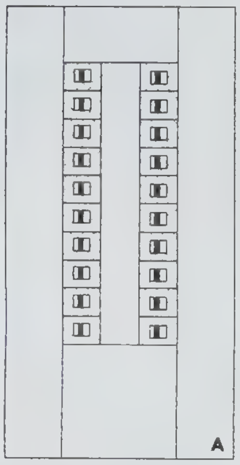
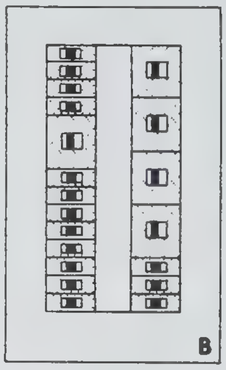
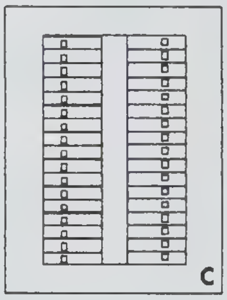


LEFT: NEMA Panelboard in a winery barrel room. ABOVE: Typical circuit breaker switch board (A).





ABOVE: NEMA 3R panelboard, center, (B), load center, left, (C) and exhaust fan control panel, right, in a white fermenter room.

General Considerations

Previously, I have discussed the consideration you need to give to the type, size, and location of the entry point of your electrical power system—the main service.

Moving beyond or downstream of the main service switchboard, you encounter some of the same considerations and decisions you dealt with previously.

Some terminology and definitions will help make the following information more clear. It is important that you understand a bit of 'circuit' jargon.

Primary Feeder: This usually refers to the circuit that a utility brings onto your property to feed their transformer. It may be 12,000 volts or greater. The transformer steps the voltage down for your utilization—usually 480 volts. This circuit may come onto your property overhead, underground, or both (overhead part of the way, then underground to a pad-mounted transformer).

Secondary Feeder: The high voltage side (12,000+ volts) of the utility transformer is called the primary. The low voltage side (480 volts or less) is called the secondary. The circuit between the utility transformer and your main service switchboard is called the secondary feeder. Makes sense, doesn't it?

Feeder Circuit: This is the circuit that leaves your main service switchboard and feeds a 'distribution panel' or 'motor control center' at some load location in the winery. It usually is designed to carry large amounts of current—100 amps or more.

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Branch Circuit: The branch circuit runs from the 'distribution panel' or 'motor control center' to the individual load. For example, it might be the circuit to an outlet for a portable pump or the circuit to a conveyor motor. It could also be a circuit that feeds another transformer that steps the voltage down still further, perhaps to 120 volts. That transformer would, in turn, feed a 'subpanel' from which you would have branch circuits to 120 volt outlets or to lights.

If you are able to locate the main service switchboard as close to the center of your loads as possible, the next step will be at the lowest possible cost, because now the feeder circuits to those distribution points will be as short as possible.

Think of your main service switchgear as your kitchen. While your kitchen may be totally adequate to prepare food for 50 people, it probably would not be large enough to serve dinner there.

Your main service switchboard, while adequate to serve your loads, should not be the point of distribution to each and every load. Instead of feeding everybody in the kitchen, you will set up tables around the house and bring service-size portions to each table.

In your electrical system, you take power blocks (feeder circuits) to local distribution points and distribute (branch circuits) to individual loads nearby. This type of system usually is referred to as a 'radial system', since we radiate out from the main service with 'feeders' to smaller load centers, then radiate branch circuits from the smaller loads to the individual loads. This concept offers many advantages, both in cost and system safety, for the reasons listed below:

Radial Distribution System

1. Space in the main service switchboard is high-cost premium space and should be conserved as a distribution point to smaller load centers, and not used to serve small, individual loads.

2. The 'available short circuit current', which is the current that a utility conceivably can deliver to your facility under short circuit conditions, is highest at the main service switchboard. The National Electrical Code requires that each circuit protective device (fuses, circuit breakers) in the electrical system be 'rated' to interrupt the short circuit current to which they may be subjected.

Often, I find small (less than 100 amp) circuit breakers in main service switchboards. Most of these probably are rated as having 14,000 amps interrupting capacity or less, while there may be 25,000 amps or more available from the utility. You can ask the serving utility for the short circuit current available at the secondary terminals of their transformer.

For all practical purposes, this is the same current level that would appear on the main bus of your service switchgear. It is not a good idea to try to serve small individual loads from your main switchgear because of possible short circuit compatibility problems.

3. It is less expensive to feed individual loads from a distribution panel or load center panel in the area where the loads are, simply because the runs are shorter and the circuit protective devices in the smaller distribution panels are less expensive.

4. Another consideration is voltage drop. When the load is a long way from the power source, it is much more practical to accomodate the voltage drop by increasing the size of the feeder to the distribution panel in the area of the loads, rather than to try to run oversized branch circuits to each load.

Types of Distribution Panels

It is again important that we spend a moment defining terms. When you are planning a new facility or upgrading an existing one, it is important to understand that not all 'distribution panels' are alike. There are several types, each

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with a specific function.

1. *Switchboard:* A 'switchboard' usually refers to a large power center-type distribution panel. It usually is freestanding and houses large feeder circuit protective devices (225 amp and larger), such as fused switches or circuit breakers. It is a 'switching center', hence the name 'switchboard'. The circuit breakers or fused switches in these panels usually are bolted directly to the switchboard bus.

2. *Panelboard:* A 'panelboard' is a smaller version of a switchboard, is usually wall-mounted, and houses smaller circuit breakers or fused switches (20 amp to 225 amp). These circuit protective devices may either be bolted to the panelboard bus or they may be of the plug-in type. This could also be a 'motor control center', a central place to feed and control a group of motors, as in the press area. Unlike a panelboard, however, a motor control center usually is a freestanding panel.

3. ***Load Center:*** A 'load center' is a smaller version of a panelboard, always wall- or surface-mounted and usually housing smaller (15 and 20 amp) single pole circuit breakers. From this panel we serve the smaller loads such as 120 volt outlets, lighting, and building ventilation fans. Sometimes, it provides control power to motor control centers or other control devices.

Typically, a feeder circuit from a switchboard feeds a panelboard, which in turn may feed a load center through a transformer. We refer to this as a 'distribution circuit' on the one line diagram of your electrical distribution system.

The one line diagram is a very valuable tool. At a glance, you can see how your system is connected together and how different elements affect one another. If you do not have one, I suggest you draw one or have one prepared. If you have one that's not up-to-date, I suggest you make it someone's responsibility to keep it up-to-date (a maintenance electrician usually is a good choice).

Where you locate each switchboard, panelboard, or load center is of course somewhat dependent upon the geography of your load. What is important is that the panel originating the final branch circuits to the loads be as close to the center of those loads as is practical.

Not only do you want to keep those circuits as short as possible for economic reasons, you also want the disconnects (circuit protective devices) as handy to the loads as possible, so that if there is a problem you don't have to run the length of the plant to turn it off.

Exactly where you locate the switchboard, panelboard, motor control or load center will also determine the type of enclosure you will need to protect it from the environment.

Choosing the Right Enclosure for the Environment

This is my pet winery peeve (it must be, I've mentioned it many times). I know that everybody wants to save money when building new facilities or upgrading existing ones, but the enclosures for your electrical equipment are not a place to look for savings. It will be a false savings.

See *PWV, Jan/Feb 1988,* for information on enclosure types and recommendations for where they should be used in the winery environment. These recommendations apply to all panel types discussed here, as do the 'working space' requirements of the National Electrical Code (space required around and in front of electrical distribution centers). I again suggest that you read Articles 110–116 of the National Electrical Code, which were printed in *PWV-Jan/Feb 1988.*

In the next installment, we will discuss, in detail, the importance of the one line diagram of your electrical power distribution system. I will explain how it should be constructed, how to gather the information that should be included on it, and how it can be of use in planning expansion of your facilities. I will also provide examples for variously sized systems. ■

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USE OF SULFUR DIOXIDE

Don Blackburn

Sulfur dioxide has been used in winemaking since the 17th century, when the Dutch began burning sulfur in empty wine barrels. Until that time, one-year-old barrels were considered unsuitable for re-use, because it was assumed that they would turn wine bad. Wines were intended to be consumed before June 1 of the year following the harvest. After that date, a wine's value routinely decreased as its quality deteriorated.

Winemakers in Bordeaux began burning sulfur, calling it the 'Dutch match' (*allumette hollandaise*). They found that the gas that protected the barrel from spoilage also benefited the wine. The obvious next step was to burn sulfur in a barrel even when it was to be refilled immediately.

The U.S. Food and Drug Administration has studied sulfur dioxide in depth, in order to determine its affect on human health. In 1959, the Pasteur Institute in Paris announced it would award a 10,000 franc prize to anyone who could identify a substance able to reproduce all of $S0_2$'s attributes with fewer of its drawbacks. The prize remains unclaimed.

Recent academic studies have looked at sulfur dioxide's role in enology, confirming the importance of the molecular form of $S0_2$ as an anti-microbial agent and specifying 0.8 mg/L molecular $S0_2$ as an ideal level. This reflects our improved knowledge of oxido-reduction and microbiology.

Yet we still don't really understand the role of SO_2 in our wines. Science has not enabled us to achieve mastery of this essential production factor. This is perhaps because $S0_2$ influences, among other things, wine texture and flavor, qualities which resist precise description.

Characteristics and Typical Usage

In a *PWV* survey of $S0_2$ usage, winemakers described free $S0_2$ as having "sharpness in the nose," "a soapy smell and taste," and "a burnt match smell." Total $S0_2$ was characterized as tasting "metallic," "bitter," and "salty," and as "harder than free, with a harshness at the back of the palate."

One winemaker's comment summed up the group's characterizations of free and total $S0_2$: "Excess free has a pungent smell, excess total adds a harsh taste." Several winemakers noted that, at normal levels, free and total $S0_2$ are not easily distinguishable.

Respondents' definitions of acceptable levels for white wine ranged from 20 ppm FSO_2 and 30 ppm $TS0_2$ on the low end to 45/170 on the high end. The average acceptable levels reported were 34/120. For red wines, the figures were 5/20 to 40/125 with an average of 29/95. There was little predictability to the ratios given for free and total $S0_2$.

Most winemakers consider it essential to add $S0_2$ after completion of fermentation (be it alcoholic or malolactic) and again at bottling. Some consider additions at the crusher appropriate, but few deem it essential; in fact, there are many in California making no $S0_2$ additions to juice or grapes (must).

Opinions vary about when $S0_2$ definitely should not be used. Some winemakers believe that none should be added before pressing, because $S0_2$ can extract more phenols located in the skins and also may prevent oxidation of certain unnecessary phenols (browning precursors).

There is little consensus concerning the amounts of $S0_2$ required for inhibition of microbial spoilage. Some enologists say that 30 ppm $FS0_2$ is sufficient to inhibit malolactic bacteria. An average figure of 25 ppm $FS0_2$ is cited as adequate to quell Acetobacter, while figures as high as 75 ppm $FS0_2$ are cited for protection against Brettanomyces.

An overwhelming percentage of winemakers consider $S0_2$ an effective anti-oxidant in wine. As one winemaker in the *PWV* survey remarked, "$S0_2$ is a poor anti-oxidant in juice, but I would be hesitant not to use any during cellaring or to bottle without it, unless we develop other ways of avoiding oxidation kinetics."

Winemakers readily cite the shortcomings of $S0_2$ addition to wine. Among the comments elicited by the *PWV* survey were the following, accusing $S0_2$ of causing: "off-character"; "off-taste and smell"; "extraction of phenols in must"; "tinny taste"; "unhappy cellar workers"; "poor winemaking techniques to be hidden"; "allergenic reaction in some consumers"; "general consumer uneasiness about chemicals."

Materials, Safety, and Measurement

A $S0_2$ solution can be made inexpensively by slowly bubbling $S0_2$ gas through water in a carboy. A 5% solution at 15°C has a specific gravity (hydrometer density) of 1.0275; a 6% solution has a specific gravity of 1.033; a 7% solution, 1.038.

Potassium metabisulfite, when used as a source of SO_2, should be thoroughly dissolved before addition to prevent it from settling out. It is preferable to dissolve it in water, because, when added to a small quantity of wine, the low pH of wine causes a significant loss of $S0_2$ through gaseous emission.

Safety precautions used for $S0_2$ additions include ventilation, acid gas respirators, face shields, and common sense. Cellar personnel should be aware of first aid procedures for overexposure.

There are several analytical procedures for measuring $S0_2$. For white wines, the Ripper method is used in probably 75% of all analyses, although some winemakers prefer vacuum aspiration. For reds, vacuum aspiration is considered very reliable, Ripper less so. A few wineries use a potentiometric iodine titration.

Robert Mondavi Winery Studies

Enologists at Robert Mondavi Winery in Oakville, CA, have adjusted their winemaking practices with the objective of decreasing $S0_2$ levels. The production, research, and microbiology departments each prepared an in-house treatise on the subject, combining personal observations with the experiences of other enologists and material derived from scientific literature.

The data compiled at Mondavi led to a focus on certain phenomena. First, the maintenance of a given $FS0_2$ level during ageing influences the total $S0_2$ level at bottling. More surprisingly, when comparing two identical wine samples with different $FS0_2$ levels, one finds that the wine with the lower $FS0_2$ retains its assigned level much longer.

The (higher) $FS0_2$ level in the other wine will diminish, approaching the concentration which is remaining steadier in the wine with lower $FS0_2$ content. The two wines will have much different total $S0_2$ contents, but similar figures for $FS0_2$. Thus it appears that a wine's redox capacity predisposes it to a certain $FS0_2$ level and a resistance to higher levels.

Research tastings at Mondavi also indicate that wines aged at lower $FS0_2$ levels are softer in the mouth and that high $TS0_2$ content produces a harsher wine. Mondavi enologist Pat Mahaney says, "Tasting results were controversial, but the low $S0_2$ wines had more character. Most of our wines have been bottled with at least 100 ppm $TS0_2$. We're lowering that. With Chardonnay, we're down to 75 ppm $TS0_2$ and are lowering it even more. I believe this is possible due to lower $FS0_2$ maintenance."

Some Chardonnay producers maintain higher $S0_2$ levels because of extended barrel ageing, while others believe that lees contact, because of its anti-oxidant action, allows lower levels. Some wineries that routinely sulfite the juice of other white varieties now refrain entirely from sulfiting Chardonnay juice, perhaps in part from the belief that Chardonnay is less prone to detrimental oxidation than other white wines.

Trials were conducted at Mondavi on Chardonnay with and without $S0_2$ being added to the must. The non-$S0_2$ wines, according to Mahaney, were "toastier, creamier, and had a more lingering finish." He adds that not sulfiting the must allows for maintenance of low $TS0_2$ levels during ageing.

"Our juices look like iced tea by the start of fermentation, but the resulting wine has excellent color and color stability. If $S0_2$ had been added, browning precursors would remain in the wine."

Ageing of white wine without $S0_2$ remains very experimental at Mondavi, but the winery's current practice does eliminate sulfiting of whites prior to alcoholic fermentation.

Forward Into the Past

It is noteworthy that French enology has no word for 'pinking'; nor, to my knowledge, do French winemakers ever refer to it. Perhaps this is because the French are less eager to maintain their wines in a state of asphyxia.

French winemakers seldom echo the New World adage that 'oxygen is the enemy of wine'. Rather, they feel that oxygen is to the winemaker what garlic is to the cook, or suspense to the storyteller: a tool to be used in proper measure according to specific circumstances.

In California, we seem to be evolving away from 'grapey' flavors toward the more 'winey' flavors of wines less deprived of oxygen (at least in the juice stage). The application of malolactic fermentation in Chardonnay and the practice of aerating Cabernet Sauvignon both serve to increase the vinous character of these key varieties.

Although the above trends are controversial throughout the California wine industry and little-known to the wine-drinking public, they are indeed influencing many forward-thinking winemakers.

These are the same winemakers interested in learning more about the effects of $S0_2$ on wine character and quality. How does $S0_2$ affect color, production of off-odors, and redox changes in the bottle? How does pH influence $S0_2$ efficiency? How effective is $S0_2$ in controlling bacterial and Brettanomyces infection? What are its effects on red wine ageing and long-term oxidation in general? How is it absorbed over the life of a wine? How critical is its anti-oxidant role? Can it be replaced adequately?

The fact that many of these questions lack satisfactory or complete answers supports the concept that wineries should follow the example of Robert Mondavi Winery and energetically examine the use of $S0_2$ in their operations. It would seem equally constructive to share the knowledge and insight we acquire through these explorations. ■

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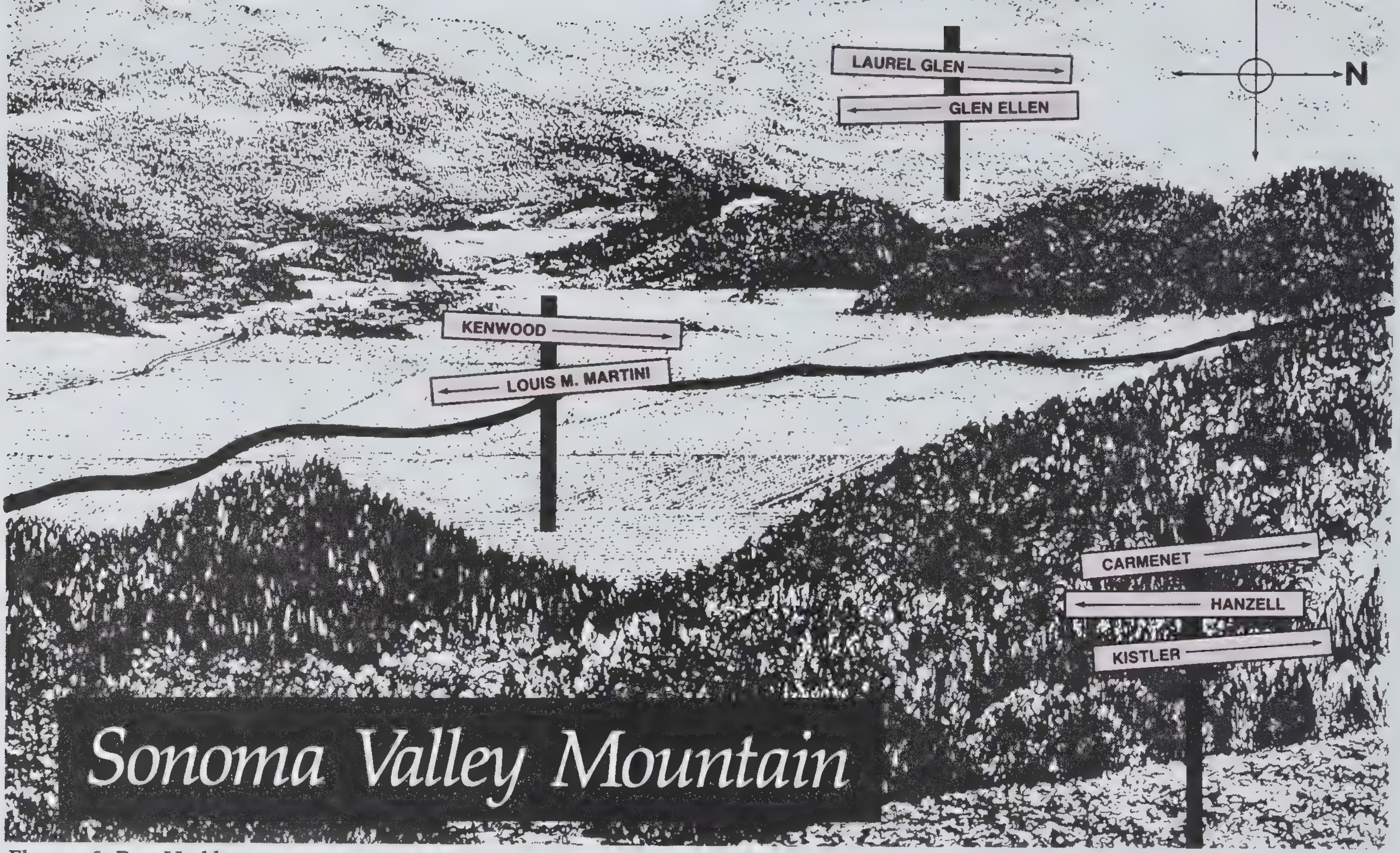


Sonoma Valley Mountain

Eleanor & Ray Heald

CABERNET SAUVIGNON

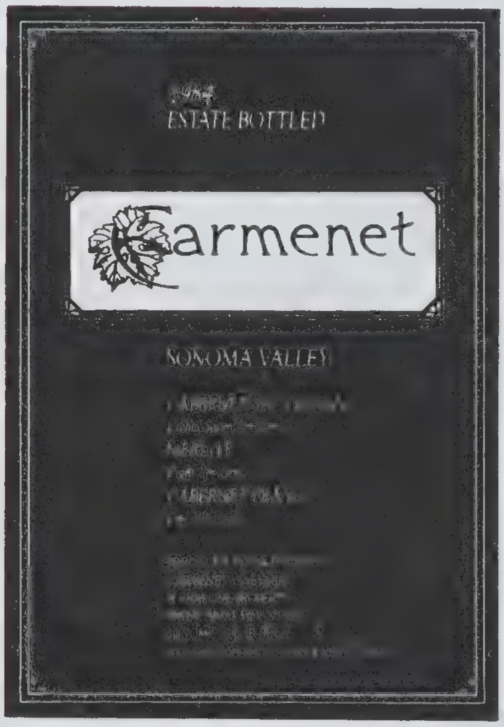
Mountain sites vs. valley floor. The debate goes on. Even among those choosing Cabernet Sauvignon grapes from mountain vineyards, there is lively discussion about the origins of characteristics found in the wine.

PWV interviewed seven winemakers whose wineries produce Cabernet Sauvignon from grapes grown on the mountain slopes of the Sonoma Valley appellation in Sonoma County, CA. The wineries were: Carmenet Vineyard, Glen Ellen Winery, Hanzell Vineyard, Kenwood Vineyard, Kistler Vineyard, Laurel Glen Vineyard, and Louis M. Martini Winery.

The discussions focused on the following vineyard issues: east vs. west-facing slopes; the effect of canopy management on the amount of ambient light available to the grapes; the balance of crop load to canopy density; vine spacing; crop levels and phenolics; the impact of water stress on flavor; and the if and when of irrigation.

Winemaking topics included: cap management; fermentation temperatures; maceration and length of maceration; racking and splashing; high extract and phenolics; malolactic fermentation; new barrels and barrel handling; topping regimes; fining practices; and blending with other traditional Bordeaux varieties.

PRACTICAL WINERY VINEYARD is grateful to Kenwood Winery for providing tasting facilities for a blind-tasting and discussion of a current release and an older Cabernet Sauvignon provided by each winery. Tasting notes included in the text below are compilations of the notes and comments made before the unveiling of each wine.



CARMENET VINEYARD

Winemaker: Jeff Baker

"Mountain vineyards have a greater variety of soil and climate interactions," says Carmenet Vineyard's winemaker Jeff Baker. "We have no problem with soil drainage, but canopy density is still a challenge. Our 16 blocks are picked over a month-long period and show vast aroma and flavor differences."

Wine Style

"I do not expect our wines to be copies of those of Bordeaux," says Baker, "but Bordeaux does set the standard for wines made from these grape varieties. We want a wine with as much complexity as possible, one that complements food. It should have balanced flavors and be palatable upon release.

"Long-term evolution in the vineyard sets our style. I'm trying to build the blend in the vineyard. Estimating longevity is difficult because 1982 was our first vintage. I expect the wine to be enjoyable about eight years from harvest and to be capable of improving for considerably longer."

Grapegrowing

Carmenet's steep, south-facing vineyards are between 1,100 and 1,500 feet elevation at the southern end of the Mayacamas Mountain range. Sixteen vineyard blocks are planted across the slopes, each with a slightly different exposure and/or elevation. The summer fog typically reaches about 1,000 feet elevation.

"Our elevation puts us above the fog layer on most days during the growing season," says Baker. "The combination of a cool maritime climate and intense late-season ripening tend to produce an aroma spectrum of black pepper and spice, rather than the more vegetative aromas produced in areas with more prolonged ripening."

The planting includes 39 acres of Cabernet Sauvignon, 7.5 acres of Cabernet Franc and 5 acres of Merlot. Block sizes range from 1.5 to 9 acres.

In 1968, 20 acres were planted with the Martini Monte Rosso clone on St. George rootstock spaced 6x12 for 605 vines/acre. An additional 25 acres were planted in 1976 mainly on AXR-1 rootstock spaced 8x12. When the vineyard was purchased by Carmenet in 1981, non-Cabernet varieties were T-budded to Cabernet Sauvignon (Mt. Eden and Martha's Vineyard scion stock), Cabernet Franc, and Merlot. Six more acres were planted at 5x11 spacing in 1983.

The oldest vines are cane-pruned on a 3-wire T-trellis, giving an overly dense canopy which tends to shade fruiting canes, an unpredictable crop level and higher pH. Remaining vines are cordon-trained on a 3-wire T-trellis which gives better sunlight exposure, a uniform, predictable crop, and improved acid balance.

"We're experimenting with a cane-pruned 6-foot high, 6-wire double T," comments Baker. "We hope to open up the canopy to give more indirect sunlight to the clusters and to bring the vines into balance with a heavier crop than the current three tons/acre. It should also better expose renewal canes and improve flavor and acid/pH balance.

"We do a light hedging of the vines immediately before harvest to improve access, but we have found earlier, more severe hedging only delays ripening. Our experiments with leaf pulling gave no noticeable improvement in wine quality."

Carmenet's well-drained soils are in the Red Hill series of decomposed lava and red loam. Drip irrigation was used on the young vines. Now the mature vines have sufficient soil moisture and are dry-farmed.

"Our soils are predictably high in potassium, so pH is an important picking criteria," says Baker. "The most important factor is to pick the fruit when it is physiologically ripe without any prune or raisin character. Proper ripeness can occur as low as 22.5° Brix or as high as 25° Brix. Acid/pH balance is normally achieved around 0.9 g/100mL TA and less than 3.4 pH. However, averages are not very relevant when you harvest 16 blocks."

Winemaking

Crushed grapes with 80% berry breakage go directly into 3,000 gal, 8x8 open-top fermenters. Active dry Montrachet yeast at 1-lb/1,000 gal inoculum completes fermentation in 5 to 7 days with peak juice temperature at 80°F and the cap at 90 to 93°F.

"The cap is gently punched down twice daily," says Baker, "because I want to achieve a complete extraction of flavor without picking up unpleasant, bitter phenolics. I suspect that punching down dislodges seeds that settle to the bottom of the tank where the temperature is lower due to stratification and phenolic extraction is less.

"We seal the tank just before dryness, while CO_2 is still being produced, and macerate for an additional 14 to 21 days or until the cap sinks. Extended maceration causes color to decrease near the end of the maceration period, but gives more stable color in the long run.

"We try to get malolactic fermentation to complete in the tank by inoculating (5x10 6 cells/mL) with ML 44-40 at 4° Brix, but it occasionally completes in the barrel." When malolactic fermentation completes, SO_2 levels are adjusted to 25 ppm free.

Pressed wine goes to 85% to 100% new chateau barrels from the Center of France. The remainder goes to 2 to 4-year-old barrels that have one or two prior fills. New barrels are rinsed with hot tap water for 2 to 4 minutes before use. The wine stays in barrels for 18 to 20 months. VA checks are made weekly during the first few months and monthly thereafter.

The wine is racked barrel to barrel every three months. During the first nine months, barrels are topped weekly. For the remaining nine months, they are bunged tight and only topped when racked.

Wines are typically fined in the barrel with four to eight egg whites/barrel and are racked off the settlings after six to eight weeks. Prior to bottling, the wine is given a light to medium pad filtration. At bottling, SO_2 levels are 20 to 30 ppm free and about 50 ppm total. The wine is released after 12 to 15 months bottle ageing.

Tasting Notes

1984 Cabernet Sauvignon

Color/Aroma: Deep purple. Herbal/berry; phenolic spice; concentrated cherry fruit; good oak mix.

Flavors: Flavors match aromas; concentrated, spicy, berry, vanilla, oaky, rich.

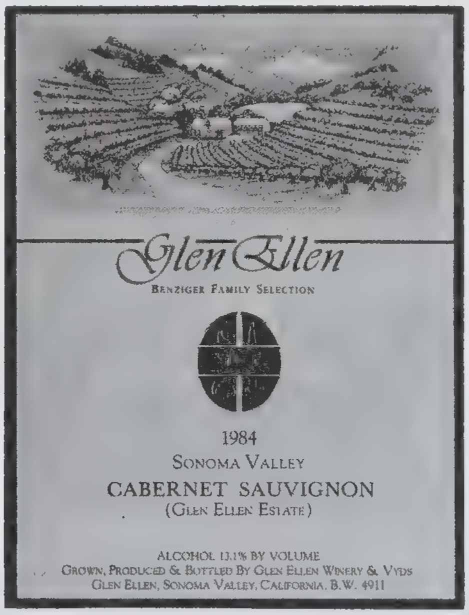
Balance/Finish: Textured and layered with good mouthfeel; medium full body; well-proportioned; slightly tannic; needs time.

1982 Cabernet Sauvignon

Color/ Aroma: Ruby/brick. Herbal, black pepper, cinnamon, old leather, slight mint.

Flavors: Good fruit core with plenty of life; clean, berry fruit; good acidity.

Balance/Finish: Balanced tannins; long finish.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GLEN ELLEN WINERY

General Manager: Mike Benziger

"Our site—its heat summation and varying sun exposures—produces the dominant cherry, eucalyptus, and black pepper aromas in our wine," says Mike Benziger, general manager of Glen Ellen Winery.

"Every exposure has a different microclimate. The highest west-facing vineyard is the warmest. We're experimenting with different canopy management and irrigation techniques in these blocks so flavors don't burn off.

"The northeast-facing vineyards are on rich, red soil, and they have the opposite problem. Here we need to open the canopy to avoid the green tea and green bean character of Cabernet Sauvignon—flavors incompatible with the cherry, berry, mint, eucalyptus, and chocolate qualities we like to emphasize."

Wine Style

"We've identified six distinct flavor patches (cherry, blackberry, black pepper, green olive, mint/eucalyptus, coffee/chocolate) within our estate vineyard," claims Benziger.

"We want each flavor patch to show in the wine with an identifiably unique aroma and flavor. We strive to use these to make a medium-bodied wine with complex aromas of cherry/berry fruit with dominant mint, eucalyptus, and chocolate flavors. Extraction of flavor with balanced tannins controlled by winemaking is the ultimate goal."

Grapegrowing

Glen Ellen's red wine estate vineyard is in a bowl between 600 and 800 feet elevation in the foothills of the Sonoma Mountain Appellation. Vines were planted between 1970 and 1983 with Kunde Vineyard and Jack London Vineyard budwood on AXR-1 rootstock.

Planting densities reflect the 'best-thinking' at the time and range from 660 to 2,000 vines/acre. The first 22 acres planted are spaced 11x8. The next ten are 10x5 and the newest plantings are 1x1 metre. All vines are on a 2-wire vertical trellis with the fruiting wire at 30 inches above ground and canopy wires at 40 inches. Yields average three tons/acre.

"Plantings on our highest west-facing elevations experience water and nutrient stress near the end of the growing season," states Benziger. "We need to irrigate these blocks through the summer. Also, pH levels get too high in some blocks and we need to experiment to learn to control this.

"We pick six to eight different times between September 7 and October 4. The six identified flavor blocks are picked, vinified, and aged separately. Picking parameters are flavor first, followed by pH in the window of 3.25–3.3 and sugars at 22–23° Brix."

Winemaking

Crushed grapes are inoculated with active dry Champagne yeast in either open-top redwood fermenters (30%) or 8x8 closed stainless steel tanks (70%). Redwood fermenters are punched down two or three times/day for four days. The s/s tanks are pumped over with a pneumatic diaphragm pump at 40 gal/min four or five times/day for 15 minutes for four days of the 5-day fermentation period. The must is tasted frequently to monitor astringency and bitterness.

"Flavors have to do with cap management," Benziger notes. "We get the best flavors without bitterness from a gentle pump-over technique." Inoculation for malolactic is done with MCW bacteria during primary fermentation after the peak cap temperature of about 95°F is reached.

"We get all the ruby color we want by 4° Brix," says Benziger. "Pressing can occur before dryness and is based on taste and tannin levels. Pressing early also allows us to avoid the use of fining agents. We deliberately avoid extended maceration because it reduces the fruit character we're trying to showcase."

Pressed wine is settled for five or six days before going into new (40%) and 1 or 2-year-old Nevers oak (40%) or American oak (20%) barrels. New barrels are soaked with cold water overnight.

Malolactic fermentation completes in barrel and the first racking is done in November when 15 to 20 ppm SO_2 is added. Barrels are racked about three times within the 8 to 10 months maximum ageing in new oak and 14 to 18 months in older cooperage. After about a year of small barrel ageing, wine from the same blocks is stored in 1,500 to 3,000-gal oak uprights until blending.

Prior to bottling, the wine is tight DE filtered. At bottling, SO_2 levels are adjusted to between 30 and 35 ppm free. The wine is bottle aged one year prior to release.

"We have a short Cabernet Sauvignon history," concludes Benziger, "but I expect our estate Cabernet Sauvignon to age four to five years and maybe ten under the right conditions."

Tasting Notes

1984 Cabernet Sauvignon (Estate)

Color/Aroma: Deep purple/ruby. Berry, cinnamon, spice, wood,mint, black pepper, cherry eucalyptus.

Flavors: Berry, weedy, mint; good mix of fruit and oak; good connection between aromas and flavors.

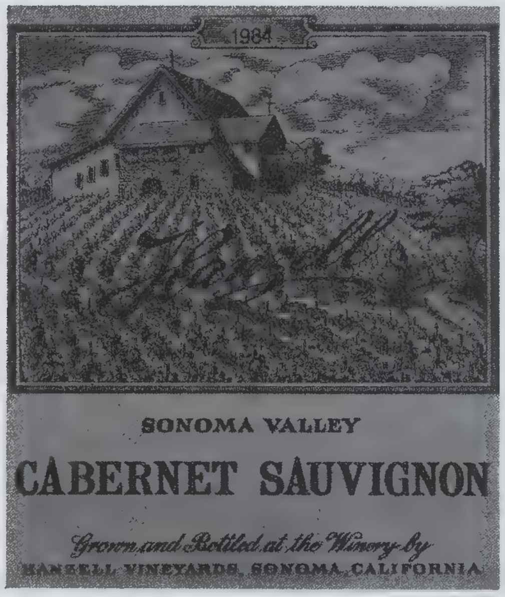
Balance/Finish: Medium weight; smooth, rounded mouthfeel; tannins will balance with time; finish lacks complexity; excellent balance.

1981 Cabernet Sauvignon (Estate)

Color/Aroma: Medium ruby/brick. Mint, spice, green bean, herbaceous, black pepper, cassis, tobacco; good bottle bouquet.

Flavors: Spice, oak, tobacco, licorice; rich and flavorful.

Balance/Finish: Well-structered tannins: good balance and finish.


1984
SONOMA VALLEY
CABERNET SAUVIGNON
Grown and Bottled at the Winery by
HANZELL VINEYARDS, SONOMA, CALIFORNIA

HANZELL VINEYARDS

Winemaker: Bob Sessions

"I suspect that crop level, water stress, canopy management, and exposure all dovetail somehow to produce the talked-about, mountain-grown Cabernet Sauvignon character," says Bob Sessions of Hanzell Vineyards.

"All descriptors are more intense, and we get high phenolic concentrations. I want heightened blackberry aromas and flavors, but we still get earthy, tobacco, leather, resiny, and smoke hints, and sometimes bell pepper, that we don't want."

Wine Style

"We want Hanzell Cabernet Sauvignon to be delicious and memorable with a chance to be great," says Sessions. "I strive for a full-bodied, rich wine with strong varietal character, good balance, finish, and mouthfeel."

Grapegrowing

Hanzell Vineyards are at 750 feet elevation on the southern end of the Mayacamas Mountain range, overlooking the Sonoma Valley. Mirassou budwood was planted on St. George rootstock in 1976-77. Spaced 8x10 in east-west directed rows, 544 vines/acre are ⅓ cordon and ⅔ cane-pruned on a 3-wire vertical trellis, yielding 2 to 3 tons/acre. "I have not yet decided on the best training system," states Sessions.

Over the last several years, picking statistics have averaged 23.6° Brix, 0.68 to 0.74 g/100mL TA, and 3.6 pH. Picking decisions are based on fresh grape flavors (especially the loss of bell pepper character), followed by sugar level and condition of the grapes (dehydration or rot).

Winemaking

Crushed grapes treated with 60 to 70 ppm SO_2 at crush are transferred to rectangular, 1-ton open-top fermenters. If the TA is lower than 0.70 g/100mL, tartaric acid additions are made. The preferred yeast is active dry Montrachet.

After six days of fermentation, with maximum cap temperature of 80°F and juice at 75°F, pressing is done between 2 and 6° Brix. Sessions has tried both gentle punch down of the cap (2 times/day) and pumping over (2 times/day for five minutes) and prefers punch down. Malolactic bacteria is added at pressing and the temperature is kept at 70°F until malolactic fermentation completes in tank.

The wine is racked to a mixture of Nevers and Allier barrels (25 to 30% new, the remainder with three prior fills) for two years. The wine is racked twice from tank to tank before barreling. The 1981 and 1984 vintages were only racked twice during barrel ageing. Presently, the Cabernet Sauvignon is racked four times during barrel ageing. The barrels are topped every two weeks and 10 ppm SO_2 is added at each racking.

"I prefer to use small amounts of the traditional blending varietals," states Sessions. "About 8% Cabernet Franc and 7% Merlot give additional flavor components and reduce tannin levels. However, I have found that Cabernet Franc tends to develop an herbaceous character in the blend as it ages."

A loose pad filtration is done prior to bottling. At bottling, SO_2 levels are adjusted to 20 to 22 ppm free. The wine is bottle-aged 12 to 16 months before release. Sessions predicts a 10 to 15 year ageing potential.

Tasting Notes

1984 Cabernet Sauvignon

Color/Aroma: Ruby. Herbal, smokey, earthy; very closed in; coffee, licorice.

Flavors: Bitter, weedy and cedary; berry, chocolate; slightlygreen; strong mid-palate.

Balance/Finish: Fruit drops out, leaving tannic finish; very astringent and rough.

1981 Cabernet Sauvignon

Color/Aroma: Ruby/brick. Herbal, earthy, slightly green, spice, chocolate, black pepper, tobacco; toasty-smokey.

Flavors: Medium-full with weak middle; burnt taste; medium acid; good mouthfeel; forward; melange of fruit and spice.

Balance/Finish: Somewhat astringent; short finish; brawny; sufficient tannin to age longer.

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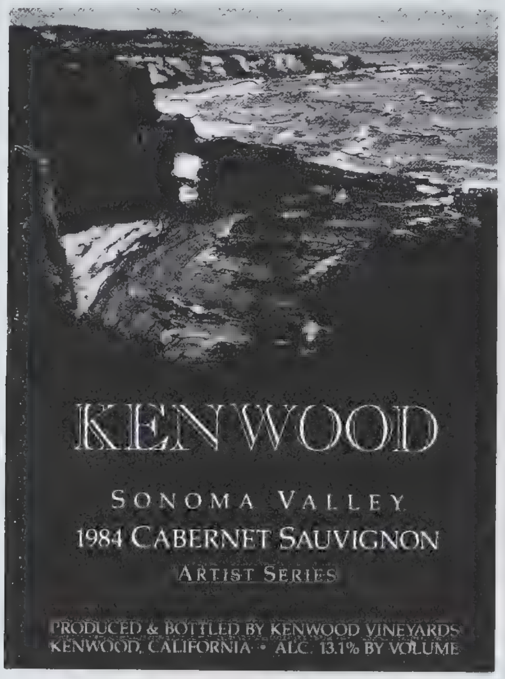
KENWOOD
SONOMA VALLEY
1984 CABERNET SAUVIGNON
ARTIST SERIES
PRODUCED & BOTTLED BY KENWOOD VINEYARDS
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KENWOOD VINEYARDS

Winemaker: Mike Lee

"We used to say that climate and soil developed identifiable mountain-grown red grape characters, but today we know that vineyard practice plays a big part," says Kenwood's winemaker Mike Lee. "Heavy foliage gives less fruitiness in both the aroma and flavor and shifts the aroma/flavor spectrum to the vegetal end.

"The phenolic intensity of mountain grapes can also be greater. Phenolics are controlled by good canopy management in the vineyard and by egg white fining in the winery. Blending varieties add flavor layers and lower tannin levels. Yet there are still vintage variations that we can't completely control."

Wine Style

"In 1975, the first Artist Series Cabernet Sauvignon didn't have the advantage of Jack London Vineyard grapes," says Lee. "We used the finer lots from available vineyards. Now, the style has changed and matured with time. We have a greater variety of vineyards to choose from, and Merlot and Cabernet Franc are available to make the wine more interesting. We used Nevers oak (in place of American oak) for the first time in 1978, and barrel-aged the wine 18 to 24 months.

"We have not 'arrived' with either our 1983 or 1984 wines, but we are narrowing our vineyard selections. Only a certain number of them will make it into the Artist Series program in the future.

"Sonoma Mountain Cabernet Sauvignon has a unique blackberry intensity. Ageing in Nevers oak enhances the blackberry character, polishes and softens it with a touch of vanillin. I don't want chocolate aroma or flavor because that's a riper grape quality. We want clean berry fruit showing, with the blending varieties taking off any rough edges."

Grapegrowing

The 1984 Kenwood Artist Series Cabernet Sauvignon comes principally from two vineyards: Jack London and Yulupa Ranch. Jack London is on Sonoma Mountain with an easterly exposure at 1,000 feet elevaton. It was first planted to Cabernet Sauvignon in 1973 and Cabernet Franc was added in 1982. All plantings are on AXR-1 rootstock, spaced 8x12, and cane-pruned on a 3-wire verical trellis in a north-south direction. Average yield is four tons/acre. The soil is red, rich, volcanic loam.

"Fruit in this vineyard consistantly ripens early," says Lee. "We pick it in the latter part of September and judge maturity by the taste of the berries. We want cherry flavors without a hint of overripe fruit." On average, this is achieved with 23° Brix, 0.65 to 0.70 TA, and 3.3 to 3.4 pH.

Yulupa Ranch is in the southern foothills of Sonoma Valley, bordering the Los Carneros appellation, at about 100 feet elevation. It was planted to Cabernet Sauvignon on AXR-1 rootstock in 1972, on rocky loam soil spaced 8x12 in a north-south direction. Vines are cane-pruned on a 3-wire vertical trellis. Average yield is 2.5 to 3 tons/acre.

"Yulupa fruit matures later with the same parameters as Jack London, but earlier than other vineyards in the Los Carneros region," claims Lee. "It produces an intensely varietal wine with concentrated blackberry aroma and flavor. It has been in the blend since 1981."

Winemaking

After crushing, the must is transferred to 5,000-gal, closed-top, jacketed, 10x8 fermenters and inoculated with active dry Montrachet yeast at 1-lb/1,000-gal. If necessary, acid corrections to 0.70 TA are made prior to yeast inoculation. No SO_2 is

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added prior to fermentaton.

During the five to six day fermentation, the cap reaches 90°F and the juice reaches 85°F. Pumpover is done twice daily for 15 minutes with a centrifugal pump. ML-34 inoculum is added during fermentation to promote the completion of malolactic during primary fermentation or soon thereafter.

"Color extraction is not a problem because clusters are loose and berries are small," states Lee. "Yulupa Ranch wine is ruby color going into the barrel. Jack London is not as dark. We are evolving Kenwood's Artist Series Cabernet Sauvignon away from dark, dense coloration by blending Merlot and Cabernet Franc to brighten the color."

Approximately 75% of the blend is racked off the skins at 3° Brix to complete fermentation. The remaining 25% is left on the skins after dryness for five days before pressing. Light pressings go into free-run tanks. Hard pressings (greater than 1 atm) are kept separate. Fractions are transferred back to tanks to settle and complete malolactic fermentation.

If malolactic fermentation does not finish in the tank, it is racked to French oak uprights to complete. SO_2 is adjusted to 25 to 30 ppm after malolactic fermentation is complete (anywhere from one to three months after dryness). "When the wine goes to barrel, I want ML complete and SO_2 levels correct," says Lee.

The wine stays in a combination of new, 1 and 2-year-old Nevers oak barrels for 18 to 24 months. New barrels are soaked with tap water for three days before filling. "I'm not going to strip character from oak at over $400/barrel," states Lee. "We are making 92,000-gal of Cabernet Sauvignon and I can do a lot of rotation. I soak the barrel only to check for leaks."

Barrels are kept on the bias and require topping only every four to five months. The barrel warehouse is temperature controlled at 58°F. SO_2 adjustments (to 25 ppm free) are made with each topping.

Approximately 50 to 75% of the wine receives egg white fining. "We don't want an overblown tannic wine," says Lee. "We egg white fine in tank with six eggs/50-gal when the wine first comes out of barrel."

"The style we're aiming for sets us up to blend with either Merlot or Cabernet Franc or both. With each vintage, the availability of vineyards with track records for blending varieties is a major consideration. Blending material for the 2,000 to 3,000 cases of Artist Series wine can come from as many as 15 lots."

Prior to bottling, the wine is given a light DE filtration. At bottling, a tight DE filtration is followed by a 0.65μ cartridge on the bottling line. Bottled wine has 25 ppm free and 60 to 70 ppm total SO_2. It is held one year in bottle before release. Lee predicts a minimum 10 to 15 year ageing potential.

Tasting Notes

1984 Cabernet Sauvignon, Artist Series

Color/Aroma: Deep purple/ruby. Intense blackberry; cinnamon/gingerbread spice; French oak vanillins; air-dried linen; slightly herbal; tobacco.

Flavors: Concentrated, rich, berry flavors; slightly bitter;herbaceous; judiciously managed oak; some black pepper; creamy texture.

Balance/Finish: Well-balanced, rich; supple tannins; medium-to full body with good mouthfeel; integrated oak; well-focused; great in 15 to 20 years.

1978 Cabernet Sauvignon, Artist Series

Color/Aroma: Dense, brick-red. Spicy, beef boullion, plums, chocolate, raisins, celery.

Flavors: Moderately rich; brown sugar; good mouthfeel; has lost some spunk; in style of old Barolo; older flavors.

Balance/Finish: Tannins still evident in somewhat harsh finish.

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KISTLER VINEYARDS

Winemaker: Steve Kistler

"The stress factor, both from a water and nutrition standpoint, may not be the advantage it was once believed to be in the 1970's," says Steve Kistler, owner/winemaker of Kistler Vineyards. "A vine which has the proper balance between vegetative growth and its crop and which has the capacity to fully ripen its fruit may be more important.

"Cabernets from the Sonoma Valley Mountains tend to develop aromas and flavors of blackberry and cassis and are less weedy and herbaceous than Cabernets from other regions."

Wine Style

"At Kistler, we are attempting to make a claret-style wine from these grapes," describes Kistler, "not a high extract mountain Cabernet. We will continue to refine our viticultural and winemaking practices to achieve this end with Cabernet Sauvignon grapes alone, before we begin blending it with Merlot and Cabernet Franc.

"The keys to our style are: malolactic fermentation completed in barrel; high fermentation temperature; gentle cap management; extended maceration; wine going to barrel with light lees; little or no fining; and no filtration.

"Our 1985 release (first wine from six-year-old vines) shows solid blackberry fruit and it is full-flavored with layered complexities. There may be a little too much tannin, but it shows potential—the potential of the vineyard. The '85 will be more enjoyable in three to five years, but it will be appropriate to age it 10 to 15 years."

Grapegrowing

At 1,800 to 2,000 feet elevation, Kistler Vineyards are steeply terraced, with a southwest exposure and north-south row direction. Vines are cane-pruned on a 3-wire vertical trellis and spaced 5x12 (approximately 600 vines/acre) on red clay/loam soil.

St. George rootstock was planted in 1979 and field-grafting of Martha's Vineyard and Mt. Eden budwood was done in 1980. Kistler expects the current one-ton/acre yield to increase to three tons/acre by the vines' tenth year.

"Sonoma Valley mountain sites are ideal for Cabernet Sauvignon," contends Kistler. "Even though the vineyards are several miles off the valley floor and not affected by radiant heat, we get very little fog. The sun is on the vines all day, with warm, southerly winds beginning around noon.

"I've had some crop level problems because of high nitrogen levels and boron and zinc deficiencies. Bloom time spraying with $ZnSO_4$ and strip spraying with boron in winter are gradually improving the problem.

"We pick anywhere from September 1 through the first week in October, with the highest elevation blocks ripening first. Judgements about when to pick are made primarily by the taste of the grapes. I don't want any greenness (herbaceous or vegetative qualities). We also monitor pH and like to pick at about 3.3."

Winemaking

The must goes directly into 4x4x5-foot open-top tanks (holding 2.5 tons) from the crusher positioned above them. If needed, acid adjustments are made to achieve 3.3 pH by tartaric acid addition. Active dry Prise de Mousse yeast is used at 0.5 lb/1,000-gal inoculum.

Pumping over is done once or twice at the start of fermentation to aerate the must. During active fermentation, the cap is punched down two or three times/day. "The key to balanced Cabernet Sauvignon is cap management and high fermentation temperature," says Kistler. "We try not to over-manipulate

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the cap. It's possible to punch down gently in our small fermenters."

Fermentation lasts eight to ten days, with maximum cap temperature at 95 °F and juice at 85 °F. When primary fermentation completes, the tanks are closed and CO_2 is injected daily during maceration. The wine is pressed 26 to 28 days after the start of fermentation, and then inoculated for malolactic fermentation. "I've used ML 44-40, MCW, and ML-34," states Kistler. "They all work and I have no preference. I make no effort to complete malolactic during primary fermentation."

If the pH is greater than 3.5 at this time, tartaric additions to taste are done and the wine goes directly into 50% new (Nadalie) and 50% into one to three-year-old Nevers oak barrels for 15 to 18 months.

New barrels are rinsed with cold water for two to three minutes before filling with wine. During the first year, barrels are topped weekly and racked 4 times. In the second year, they are topped twice/month and racked twice. SO_2 levels are kept to 15 ppm.

"We prefer to put the wine in the bottle unfined and unfiltered with 25 ppm free and less than 100 ppm total SO_2," says Kistler. "Occasionally, we've had to use egg-white fining (two to six eggs/barrel). Depending on economics, the wine is aged eight to nine months in bottle before release."

Tasting Notes

1985 Cabernet Sauvignon

Color/Aroma: Deep purple. Blackberry, cherry, cassis, mint, toasty oak; cinnamon spiciness.

Flavors: Good depth and intensity; rich, classic fruit with black pepper spice; full mouth-feel, youthfully tannic.

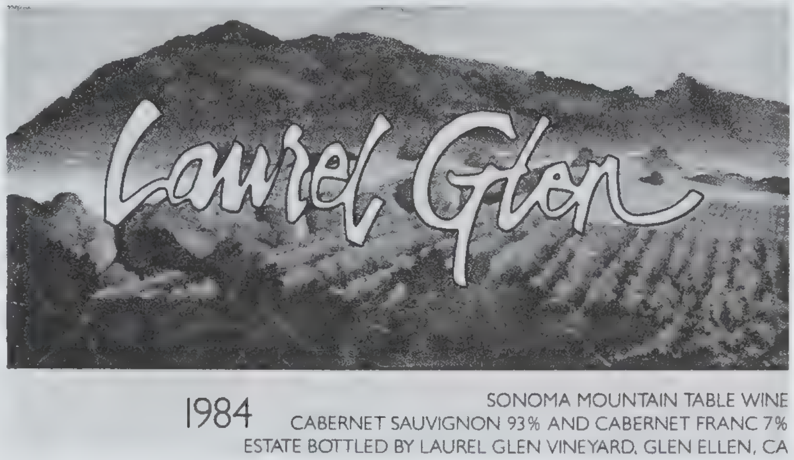
Balance/Finish: Full, rich mid-palate; medium astringency; well balanced and generous; slightly hot from wood tannins; long, smooth, lingering finish; excellent ageing potential.

1980 Cabernet Sauvignon

Color/Aroma: Brick brown. Green bean, tobacco, herbaceous, spice, coffee, mint, toasty, cigar tobacco.

Flavors: Toast, oak, berry; herbal flavors relate well to aroma; good extract.

Balance/Finish: Good acidity; relatively smooth, long finish; balanced tannins; well-focused.


Laurel Glen
1984
SONOMA MOUNTAIN TABLE WINE
CABERNET SAUVIGNON 93% AND CABERNET FRANC 7%
ESTATE BOTTLED BY LAUREL GLEN VINEYARD, GLEN ELLEN, CA

LAUREL GLEN VINEYARD

Winemaker: Patrick Campbell

"Mountain vineyards with thinner soil and shallow canopies have aromatics in the fruit realm rather than at the herbaceous end of the spectrum," comments Patrick Campbell, owner/winemaker at Laurel Glen Vineyard. "All things being equal, the fruit factors in both aroma and flavor are more intense in mountain-grown red grapes. Vegetative/herbaceous qualities are greatly reduced.

"As a winegrower, I'm concerned with the aspects of grapegrowing that relate to tannins. Important factors in the vineyard are: east vs. west-facing sites—a major consideration in the initial planting; canopy management—fruit must be in ambient light, not in shade or, worse, in direct sunlight; irrigation—small berries yield more tannins. Balanced berries are the goal and you can achieve this balance with a two to three ton/acre yield.

"In the winery, racking with air and early splashing are essential, coupled with consistent topping on a weekly basis. Both of these winemaking tools let the wine mature as quickly as possible in the barrel."

Wine Style

"I try to let the vineyard express itself in the wine," says Campbell. "Therefore, I do more manipulation in the vineyard than in the winery. The vineyard is the composer, and a musician's job is to play the music the way the composer envisioned it.

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"The key word for Laurel Glen Cabernet Sauvignon is 'supple'. A wine that's tannic in the beginning will never be drinkable because it will lose all fruit by the time its tannin levels drop. A wine should feel good in the mouth even when it's young."

Grapegrowing

Laurel Glen Vineyard, at 1,000-feet elevation, sits on the northeastern slope of Sonoma Mountain, above the fog line. With a northeast exposure, it inclines toward the morning sun and away from the hot afternoon sun.

Unlike western-facing and valley floor locations, we experience higher low temperatures and lower high temperatures," notes Campbell. "Our overall temperature range is devoid of daily extremes and falls within a narrower band than do vineyards with different exposures.

"We're high Region III by the Davis zoning method, but this is fallacious in our situation. The vineyard warms early in the day, but cooling afternoon winds and warmer nights throw off the region designation. We have an even ripening day that produces softer tannins than west-facing vineyards. Abundant precipitation during the rainy season allows us to dryfarm."

Extinct volcanoes formed the red clay loam, rocky, iron-rich soil. Calcium layers in the soil were pushed out of San Francisco Bay. The vineyard, planted in 1968 on St. George rootstock, is spaced 8x8 to 8x12 (450 to 680 vines/acre), and is cane-pruned on a 3-wire vertical trellis. Yield is 2.5 tons/acre.

Picking is completed in a three-week period occuring between September 1 and October 15. Campbell considers the second week of September the ideal starting time. Average picking statistics are 23° Brix, 0.9 g/100mL TA and 3.45 pH, but picking is based on sugar levels and Campbell's taste experience. "If you don't have correct sugar levels, it doesn't matter what the pH is," he notes.

Winemaking

A mobile Mortl crusher is used. Active dry Montrachet yeast at 1-lb/2,000-gal inoculum initiates fermentation in 5.5 (high) x 8-foot (wide) open-top fermenters. The cap, which reaches a maximum temperature of 88 to 90°F, is punched down two to four times/day during the 8 to 12 day fermentation. At 15° Brix, malolactic bacteria is added to encourage malolactic fermentation, but it usually completes in barrel or in uprights.

Campbell decides when to press based on taste and the need to free up fermentation space. "Fermentation tanks holding 2,000-gal allow flexibility, during a three-week harvest, in picking the south-facing and north-facing blocks," he says. "We don't do much extended maceration because we can't close the fermenters.

"The wine goes directly from the press to barrels. I don't want clean wine going into wood." About 60% to 80% new Nevers oak barrels are used each year; the remainder are barrels with one or two prior fills. New barrels are treated with soda ash and a five-minute hot water rinse followed by a citric acid rinse.

When malolactic fermentation completes, an 8% aqueous SO_2 solution is used to bring free SO_2 levels to 25 ppm, where it is maintained. Wine remains in the barrel for 18 to 22 months and is topped weekly. There are three rackings with initial splashing in the first four months, a total of five rackings in the first year, and four rackings in the second year. Based on taste trials, egg white fining is done with one to eight egg whites/barrel.

"I use 8% to 12% Cabernet Franc as my blending variety of choice," says Campbell. "It tends to cut the overly fruity edge and adds a spicy character to both the aroma and taste as well as sleekness and refinement."

Prior to bottling, a medium DE filtration is done, followed as needed by a tight polish filtration. SO_2 levels are adjusted to 25 to 30 ppm free and under 70 ppm total at bottling. Bottle ageing is seven to eight months before release. On the question of ageability, Campbell cites the adage that it's a far greater crime to drink a wine too old than too young.

Tasting Notes

1984 Cabernet Sauvignon

Color/Aroma: Ruby. Green olive, tobacco, herbaceous; French oak vanillins; fresh blackberries, slight earthiness, toasty oak.

Flavors: Clean and rich, with good fruit density; cassis,berry/vanilla.

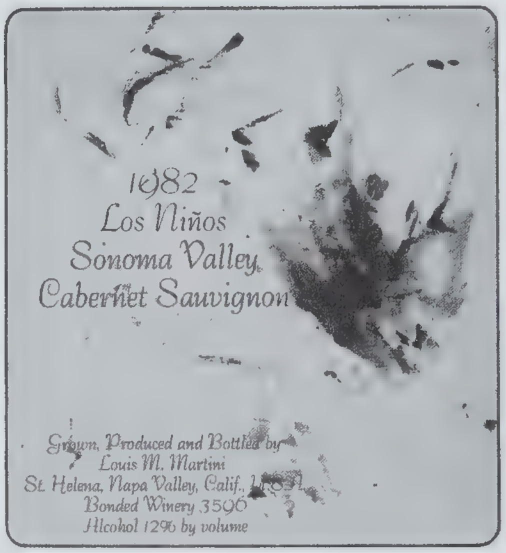
Balance/Finish: Smooth, very drinkable; too soft; rich, full finish, short finish (tasters disagreed).

1981 Cabernet Sauvignon

Color/Aroma: Ruby. Coffee, spice, black pepper; slightly weedy; classic French cigar box; earthy; sweet fruit.

Flavors: Full, rich; tobacco; oak; good acidity; complex.

Balance/Finish: Good balance; slightly green; well-structured, weighty, viscous.



LOUIS M. MARTINI WINERY

Winemaker: Michael Martini

"Whatever characteristics you attach to mountain-grown Cabernet Sauvignon, you must also say 'concentrated'," states Michael Martini, winemaker at Louis M. Martini Winery in St. Helena.

"The origins of a subtle black pepperiness are soil drainage and water stress. Along with the traditional concentrated blackberry and cassis qualities, our Monte Rosso site develops a cinnamon spice note with bottle age. In extremely cool years, we get jalapeno green pepper aromatics and flavor.

"Mountain fruit produces a lean wine that isn't hard. You would never attach the word 'fat' to it. 'Fuller' is a good term for valley floor Cabernet Sauvignon. Wines with medium tannin levels come from the center of Napa Valley. The Los Carneros region gives the hardest tannins. It's the fruit that's accentuated in mountain-grown grapes. When overall balance is considered, the phenols are actually backed off."

Wine Style

"The ultimate the vineyard has to offer is our goal," says Martini. "Dry farming and low yields (1.5 to 2 tons/acre) produce elegance and power, a wine with cassis and black pepper enhanced and made complex by vinification methods. We have concentrated fruit with subtle spiciness in a refined and elegant wine that has exceptional mouthfeel."

Grapegrowing

Monte Rosso vineyard, on Mount Pisgah in the Mayacamas Mountain Range, is between 900 and 1,200 feet elevation with a southwest exposure. The southernmost mountain vineyard facing San Pablo Bay, it enjoys cool air temperatures. Average vine age is 20 years, with the oldest at 45 years. The oldest vines are on St. George rootstock. Vines planted in the past 15 years are on AXR-1. New plantings were made with Monte Rosso budwood.

Half the vineyard (spaced 6x6) is both head and cane-pruned. The oldest vines in the remaining portion are cane-pruned on a single wire, while the same section's 10-year-old vines are cane-pruned on a 2-wire vertical trellis spaced 6x10 and 8x10. Contour planting across the slope gives an average of 600 vines/acre.

"We strive for maximum canopy development," says Martini. "We're doing experimental manipulations now."

Picking is done in a four to five day period between the third week of September and the second week of October. The first gauge of maturity is taste. "You can taste the wine in the grape if you practice," states Martini.

"Cool air keeps the TA high. Average parameters are 22.8° Brix, 1.0 g/100mL TA, and 3.2 pH, but I've gone to 26° Brix, because the phenolic structure wasn't there in the taste.

Crushed berries with 80% to 90% berry maceration are inoculated with 1% active dry Champagne 595 yeast to start fermentation in 14x12 jacketed tanks. "Monte Rosso is a low Region II ranch. In some years, like 1983, we've used 10% stem return for added depth of structure," comments Martini.

"To maintain fruit, I want maximum temperatures (cap at 75°F, juice at 65°F) after the first four days of fermentation. Using a method I borrowed from Eric Wente, the fermenters are connected by PVC pipes and closed at 15° Brix with the pipe open. That way, if one tank doesn't have CO_2, another provides it. I experimented with this technique in between 1978 and 1980, and now it's part of the production method.

"At 12° Brix, we turn the cooling off and let the temperature increase to maximum. From then, it's about three days to dryness." Pumping over is done twice daily for 40 minutes. Starting on the seventh day (about 0.5° Brix), the cap floats and a 10-day maceration under CO_2 begins.

Deciding when to press after maceration is based on taste. Tank contents are gravity drained overnight and 140 to 145 gal/ton of free run wine is obtained.

Within 30 to 60 days after maceration, ML-34, isolated in the Martini Winery, spontaneously completes malolactic fermentation. "I want malolactic fermentation completed in the tank before the wine goes to barrel," Martini emphasizes. "When malolactic fermentation happens in the barrel, the bacterial lees give a barnyard character.

"Traditionally, 80 ppm SO_2 was added at the crusher. In 1984, we went to 40 ppm. Now, none is added until malolactic fermentation completes. The wine goes to barrel with 30 ppm, pH equivalent free SO_2."

New, medium-toast Nevers chateau barrels are used for the 18-month ageing period. They are soaked with cold water until there is no leakage. The wine is racked twice during this period and the barrels are topped weekly. Egg white fining (0.25 to 0.50-lb frozen egg whites/1,000-gal) is done in conjunction with potassium bitartrate stabilization (2 weeks at 28°F). This is followed by a medium DE filtration into the bottling tank. A 0.85μ pad is used on the bottling line. SO_2 adjustments to 30 ppm free and 40 to 60 ppm total are made at bottling.

"There's no standard bottle ageing period for the Los Ninos (children's artist series) wines which we introduced in 1981. I have to wait for the kids to do the label, and that can take 3 to 5 years," says Martini. "I'm drinking 1957 Monte Rosso wine now, so there's no hurry to release a wine that I suspect will age 30 to 50 years."

Tasting Notes

1982 Los Ninos Cabernet Sauvignon

Color/Aroma: Medium ruby/purple. Blackberry, cassis, vanillin, spice, mint, cedar.

Flavors: Soft, yet rich and complex; medium tannins; youthful flavors, but mature aromas; spice, cedar, blackberry and cassis.

Balance/Finish: Good acidity; excellent balance; slightly thin in mid-palate; fast finish; clean; good ageing potential. Different from the other wines in the flight of recent releases. Very aromatic, but lacks punch in the finish.

1979 Cabernet Sauvignon—Monte Rosso, Lot 1

Color/Aroma: Ruby brick. Tobacco, raisin, slight mint, plum, chocolate, spice; well-integrated, complex berry aromas.

Flavors: Balanced, delicious, mouthfilling; chocolate and blackberries.

Balance/Finish: Medium rich; smooth, elegant, refined; excellent.

SUMMARY

Cabernet Sauvignon and the other traditional Bordeaux red varieties grown in mountain regions of Sonoma Valley have dense, intense fruit without the concentrated tannins characteristic of valley floor grapes. They also have soft, rich aromas, reduced phenolics and a smooth finish.

Phenolics can be controlled in the vineyard. Retraining of vines to open the canopy can be an important factor in this regard. In vintages with higher phenolic concentrations, the total fermentation and maceration period should be limited to about 14 days. If the winemaker's intent is to showcase concentrated fruit, extended maceration should be avoided. ■

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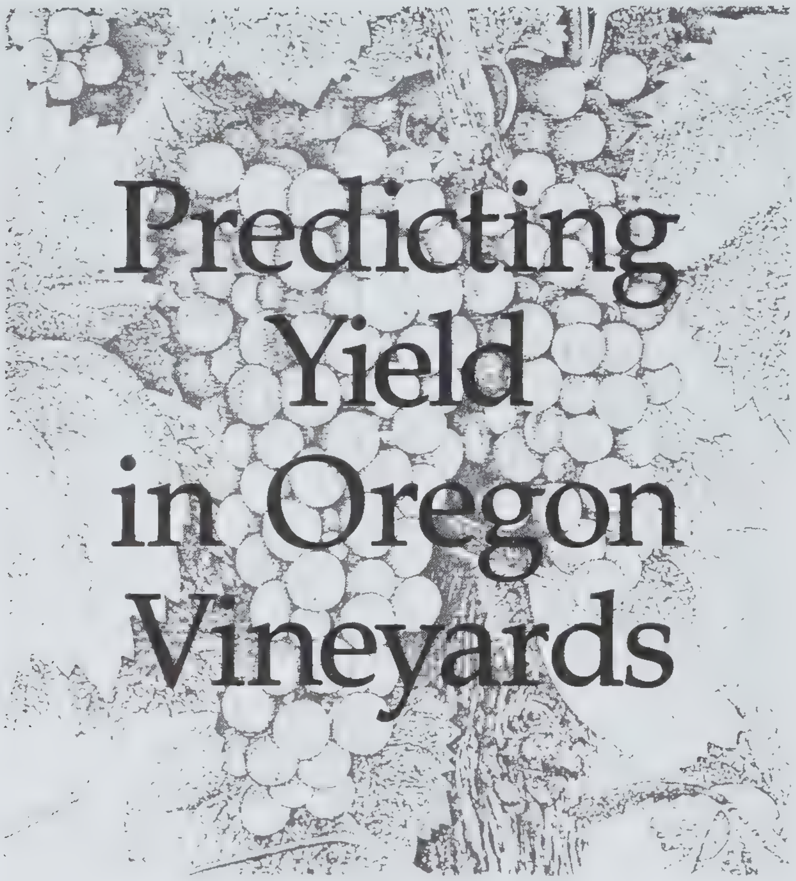

Predicting Yield in Oregon Vineyards

Steve Price
Dept. of Horticulture
Oregon State University

Cool weather during fruit initiation and bloom can cause wide fluctuations in yield in Oregon vineyards. These fluctuations in clusters per vine, flowers per cluster, and berries per cluster make yield prediction difficult. In turn, mistaken yield estimates cause problems in marketing grapes and making sound viticultural decisions.

For the past three years, Oregon State University has been testing methods of estimating yield. The system we have developed appears to work well for Pinot noir and, with some modification, it should work for other varieties as well. Growers interested in trying this system should begin collecting data this season, because long-term records are important.

The system requires a grower to measure or estimate four factors each season: 1) bearing vines per block; 2) clusters per vine; 3) cluster weight at the lag phase of berry growth; and 4) cluster weight at harvest.

This data enables a grower to make two crop estimates each season. The first is pre-bloom, early enough for sales and winery planning. The second is pre-veraison, still early enough to revise sales plans and to make crop adjustments through cluster thinning.

Each factor is discussed below, followed by examples of how yield estimates can be developed from information compiled in the vineyard.

Vines Per Block

An accurate count of bearing vines is important for two reasons. First, the grapevine is the basic unit of the vineyard. An estimate of yield/vine or clusters/vine can be used to estimate yield or cluster number per block only with an accurate vine count.

Second, vines per block can change from year to year. In a young vineyard, not all the vines are in production; the number of bearing vines increases each year. This is probably the main variable affecting total yield.

Another reason to count vines is to monitor the effects of destructive influences such as phylloxera or crown gall. Again, the main impact on yield is the change—in this case a reduction—in the number of bearing vines/block.

Vine counts are simple to make. First, you need to determine the maximum number of vines possible in the block. In a rectangular vineyard, simply multiply vines/row by number of rows. In an irregular vineyard, a row by row count may be necessary.

From then on, only non-bearing vines need to be counted each year. Walk every other row in early spring with a hand counter and count missing vines. If you find this too serene, an ATV can speed up the process.

Clusters Per Vine

Nodes per vine, shoots per node, and clusters per shoot all change from year to year, and all affect the total number of clusters per vine. Nodes/vine is determined by vine size and pruning severity. Shoots/node is affected by pruning severity and weather conditions during bud initiation the previous year. Clusters/shoot also is affected by the weather during the year prior to cropping.

Counting clusters per vine before bloom measures the effect of these factors. Clusters can be counted as soon as they are visible. Two weeks before bloom clusters have emerged and are not yet obscured by foliage. Not all vines in a block have to be counted. Sample vines can be selected either randomly or by a grid system (for example, every tenth vine in every other row). All the clusters on the sample vines should be counted.

The number of vines in the sample depends on vineyard uniformity. In a uniform vineyard, where all the vines are the same size, same age, and pruned to the same bud number, only 4% of the vines need to be counted for small blocks of one to three acres. This percentage can be reduced in larger blocks.

If a block is not uniform, and vine size and vine age varies greatly, the percentage of vines counted must be increased. If it's not, accuracy of yield estimates will be reduced. In one trial, a non-uniform vineyard required 30% of vines to be counted. This adds considerably to the cost of yield prediction.

Cluster Weights At Lag Phase

Cluster weights are difficult to predict. Final cluster weight is sensitive to environmental influences right up to harvest. However, the effects of all but one of the variable factors that influence final cluster weight can be seen at the lag phase of cluster growth.

The lag phase occurs about midway between bloom and harvest. It is a period when the growth rate of berries slows temporarily. Generally, it is associated with lignification or hardening of the seed coat. Flowers per cluster, berries per flower or fruit set, and seeds per berry (which greatly affects berry weight) all have been determined by this stage, and their effects can be measured by a sample cluster weight.

This sample weight correlates well with final cluster weight. Simply, large clusters at the lag stage are large at harvest; small clusters at the lag stage are small at harvest.

A random sample of 200 to 400 clusters/block is usually adequate. This is weighed and divided by the number of clusters in the sample to calculate an average cluster weight. Individual clusters need not be weighed.

Timing the sample is more difficult. Mid-point of lag phase averaged 55 days after first bloom in the three years we conducted trials. This corresponded to seed hardening (when 75% of seed tips were too hard to cut with a knife without crushing the berry).

Since seed hardening usually is associated with the lag phase of growth, 75% hard seed tips is probably a good standard for a lag phase sample on any seeded variety. In the 1988 growing season, we will compare lag phase and seed hardening on several cultivars.

Pinot noir was used in this study because it is the most widely-planted grape in Oregon. Other varieties show much more variation in cluster weight. Chardonnay and Sauvignon blanc vary due to differences in bud fertility. Merlot and Gewurztraminer vary due to large differences in fruit set. Both lag and harvest samples should be increased for these varieties.

Seed hardening cannot be used to time sampling of seedless varieties, which, in any event, do not show a distinct lag in growth rate. However, a mid-season sample can still be useful for seedless varieties. Days past full bloom would have to be used to time the sample.

Cluster Weights At Harvest

Cluster weights at harvest are a key part of any yield prediction program. The object of the harvest sample is not to predict yield that year, but to provide records for yield prediction in subsequent years.

Long-term records of harvest cluster weights reveal the relationship between cluster size variation and yield variation. This information can be used with early cluster counts to predict yield. In addition, the lag phase sample can be used with the average harvest cluster weight figure to predict the year's harvest cluster weight, as shown below.

A harvest cluster sample can be taken from picking bins or off the vines. It is much easier to sample out of bins, but a random sample taken off the vines has several advantages. It correlates better with the lag sample, and it probably is closer to the true cluster weight than is a bin sample.

Bin samples can be misleading because it is difficult to distinguish whole clusters from partial clusters and cluster wings. Usually 200 to 400 clusters provide an adequate sample. Individual cluster weights are not necessary, only an average weight for the sample.

Predicting Yield

Yearly information on vines/block, clusters/vine, lag phase cluster weight, and harvest cluster weight provides a grower with enough information for an effective yield prediction program.

The first prediction can be made after the vine counts and estimates of clusters/vine, preferably just before bloom. Vines/block are multiplied by clusters/vine to estimate clusters/block. The average harvest cluster weight is multiplied by clusters/block for an initial estimate of tons/block.

The first estimate can be revised after the lag phase cluster sample is taken (about 55 days after full bloom for Pinot noir). This sample is compared to the average lag phase cluster weight to make an estimate of harvest cluster weight.

For example, if the lag phase sample is 20% larger than the average lag phase cluster weight, harvest clusters can be estimated to be 20% larger than the average harvest cluster weight. This revised cluster weight is then multiplied by clusters/block to make a revised estimate of tons/block.

These two predictions can be put into formula form as follows:

First Prediction – $V \times C \times H$ = Estimated Yield
where V = vines/block; C = clusters/vine; H = average cluster harvest weight.

Second Prediction – $V \times C\ (S/A \times H)$ = Estimated Yield
where S = lag stage cluster weight; A = average lag stage cluster weight.

This formula assumes that cluster weight will always increase the same from lag phase to harvest. In fact, that won't always happen, but for the prediction you assume it will.

Final cluster weight will be influenced by environmental effects on berry size. During the final part of the season, growers should be aware of these factors and adjust their estimates accordingly. A hot, dry season will result in berry sizes smaller than average, so crop estimates should be reduced.

Conversely, late rain will increase berry size, causing yield estimates to be increased. Bird damage, botrytis, and mildew also can have profound effects on cluster size and yield, so no estimates should ever be considered final. At best, they are only predictions of yield potential.

Growers will not be able to use this information to predict yield the first year. For the first prediction, records of the previous years' harvest cluster weights are required. For the second years' prediction, records of previous years' lag phase cluster weights are needed as well.

Conclusion

Accurate yield prediction requires long-term records and an understanding of the causes of yield variation. The system described above works well with Pinot noir in the Willamette Valley. I believe the same concepts and procedures should work elsewhere and with other varieties.

Knowing the factors that cause yield variation and estimating those factors allow growers to anticipate and predict yield variation. This information can eliminate confusion in vineyard and winery planning. ■

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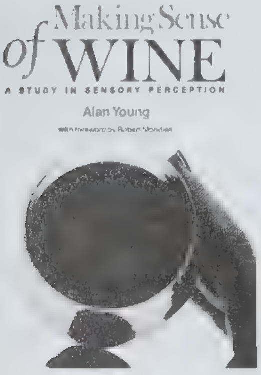

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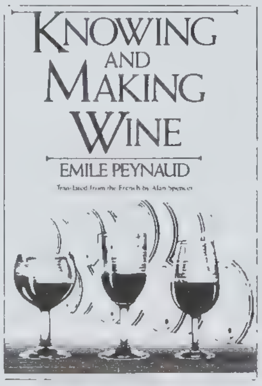

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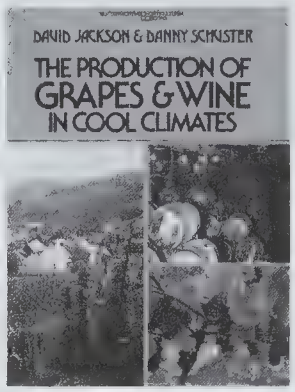
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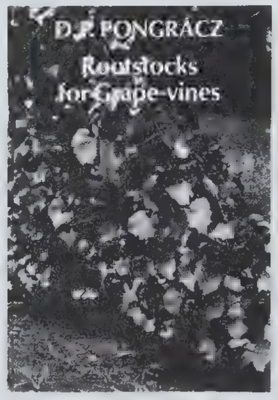

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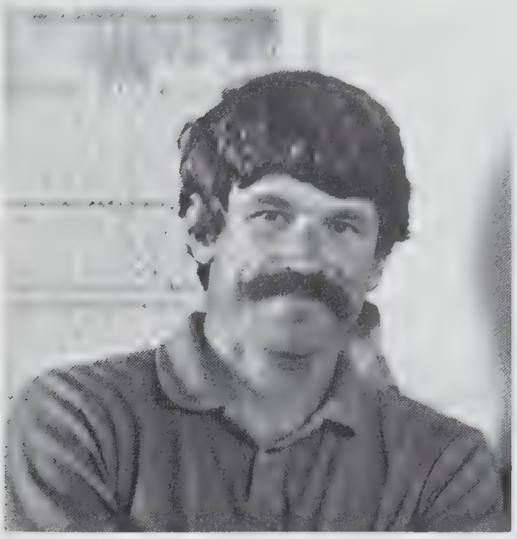

Paul Dolan

Fetzer Vineyards

What's the best wine to enjoy with food? If you answer: "A food-wine," you are being redundant. Wine, the fermented juice of the grape, is a food. Any wine can be consumed with any other food. For ***enjoyment***, however, you want to match their compatible qualities. For those who seek to produce and enjoy attractive qualities in food and wine, balance is the key.

In all food preparation the preparer strives for a balance of aromas, flavors, textures and visual appeal. Winemakers begin with grapes and their unique varietal and vineyard characteristics. Using the wide range of vinification techniques available, the winemaker, like any other good food preparer, strives to develop his raw materials into a balanced finished product.

This balance, of course, does not occur at only a single point. Variations in taste preferences distribute points of balance along a narrow band. Every winemaker has a different approach to realizing ideal balance in a wine. Some may feel that certain wines need more sugar or acid, others may choose to emphasize malolactic character.

But all winemakers realize that the above-mentioned band of balance has a limited range. Straying too far in any direction takes the wine out of balance, like a food prepared with too much salt. Even if you like salt, you still can recognize too much of a good thing. When foods (including wines) are out of balance, it is difficult to enjoy them with one another.

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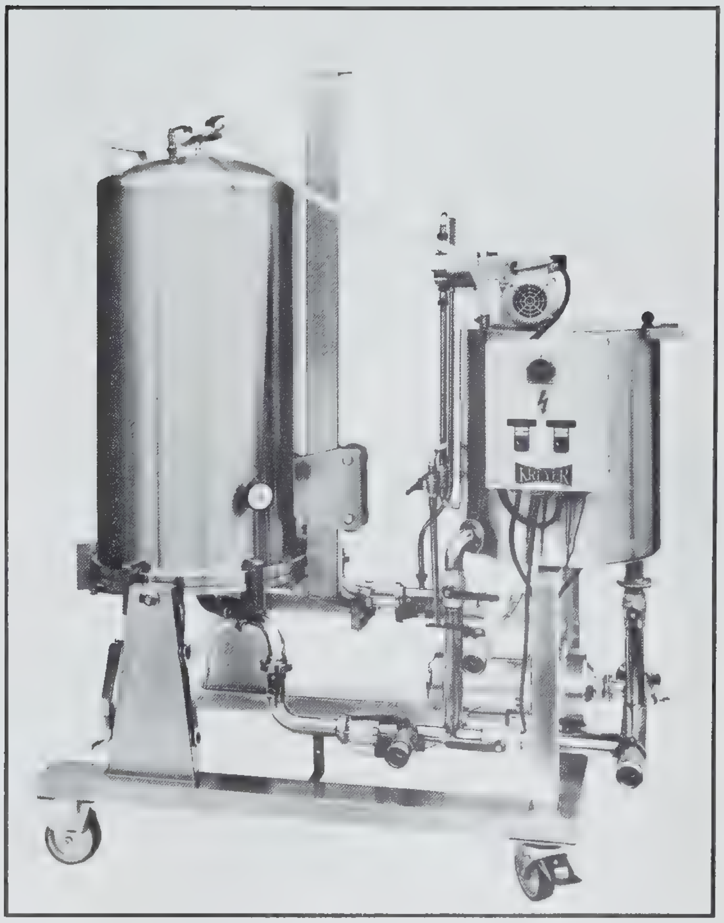

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tages at Fetzer, these grapes have made full-flavored, richly extracted red wines ripe with blackberry and fresh cracked black pepper qualities. The production of these wines has changed little (we're now using French oak as well as American oak during ageing). We found that narrow band of balance for these vineyard-specific varietals on the first try.

With other varietals, we're still focusing our aim to find the right balance for each grape. With Chardonnay, we've moved from producing only one or two different bottlings from each vintage to at least four each year. This was encouraged, in part, by market demand, but much evolved from our definition and redefinition of the correct balance for each lot of Chardonnay crushed at our winery.

As Chardonnay grapes arrive at the crushing station, we evaluate their qualities to decide upon appropriate winemaking techniques. Some lots have fine fresh character but little depth of flavor. These we choose to ferment in stainless steel tanks and bottle without oak ageing. For wines such as our Sundial Chardonnay, this kind of winemaking results in balanced character appropriate to the grapes.

Other lots of Chardonnay, however, are barrel-fermented, aged on the lees, and allowed to complete malolactic fermentation. These grapes are determined at the crusher to have enough depth of varietal character to benefit from such techniques. Our Special Reserve Chardonnay, like our Sundial Chardonnay, is in balance. But they are different wines.

In practice, many decisions are made before the grapes arrive at the winery. That's because we've learned what to expect from specific vineyards. Sometimes, however, the process is reversed. We know what we *want* to expect from a vineyard, but it doesn't show up at the crusher at harvest. In cases like this we look for balance deductively, beginning only with the ideal.

For example, we wanted some classic cassis and tobacco qualities in our Cabernet Sauvignon, but we had not found them in our existing Cabernet vineyards. Instead of trying to force these qualities from inappropriate grapes, we looked for and found vineyards that could produce them. Imprinting characteristics on inappropriate grapes produces imbalanced wines. Balanced finished products develop from appropriate raw materials.

Once we realize that wines and foods can be both balanced and stylistically varied, the fun of pairing them begins. Some Chardonnays will prove an exquisite match for a smoked salmon mousse; others will be lost. The pleasure is in the experimentation, the search for that perfect match. As long as we are dealing with balance—wines and foods that are true to their raw materials—this quest will most often meet with success.

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with their French counterparts.

One thing is certain: California produces grapes with great intensity of flavor. During the late 1970's and early 1980's many California vintners seemed to be in a competition to see who could produce the most intense wines. Because many of these wines were coarse and alcoholic, they were criticized for being incompatible with food.

In an effort to counter this criticism, many premium wineries began to tone down their products. These lower alcohol wines were frequently marketed as 'food wines', and their producers boasted of their "delicacy, subtlety, and finesse."

In reality, many of these products were just plain thin and lacking in character, and the term 'food wine' became a cliche used among salesmen to describe a wine that had little to recommend it. By saying this, I do not mean to belittle the importance of wine as an accompaniment to food, but having always considered wine to be food, the term 'food wine' seems redundant.

Most wines can be paired with a variety of foods. How well a particular wine will match up with a particular food is sometimes hard to predict. A few general rules seem to hold true: any well-balanced wine that can stand on its own will enhance and be enhanced by food. Rich, intensely flavored wines tend to go best with heavier, more robust foods. Delicately flavored courses call for more subtle wines. Dry wines are more versatile and palate-refreshing than sweet or off-dry wines. The more complex a wine's flavors, the easier it is to match with foods.

Experimenting with various food and wine combinations often leads to interesting results. Some pairings work well because the wine and food share similar flavors, but others will be successful because the flavors contrast, complementing one another in other ways. For instance, a light-bodied, high-acid wine can be a refreshing palate cleanser for rich, heavy sauces.

To me, producing wine to be 'food wine' is putting the cart before the horse. I try to produce wines that are classically styled and complete by themselves. If I do this successfully, I feel assured that my wines will prove to be excellent accompaniments to food.

Dwayne Helmuth

Callaway Vineyard & Winery

As a winemaker who has grown up in the grape and wine business, I find the concept of 'food wine' a sad comment on the use of wine throughout history. Wine is primarily a mealtime beverage to be enjoyed in moderation. Even the categories established by our federal regulators; table wine, aperitif, and dessert wine—suggest wine's intended use as an accompaniment to all parts of a meal.

I feel that the most important comment

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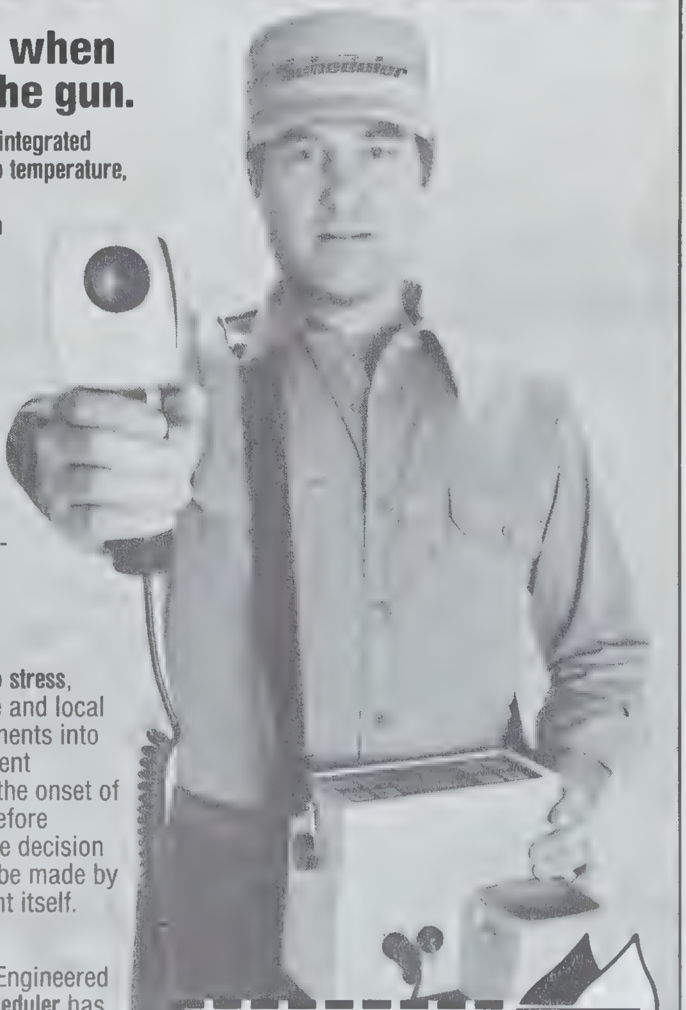

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from someone tasting or drinking our wines is that the wine "tastes good." Those simple words are the highest compliment I can be paid as a winemaker. This may sound overly simple to many critics, but it's true. Aside from concern for nutrition and moderation, what I require from the foods I eat and the beverages I drink is that they "taste good."

Who knows best what tastes good to you? You do!

At Callaway, we have developed a style which emphasizes that wine is made from grapes. Grapes are a fruit. So we make white wines that exhibit the delicate fruit flavors and fresh aromas of the grapes themselves. I know that this explanation may sound too simple to wine experts, but it's a style we hope appeals to American consumers, most of whom are not wine experts.

We don't believe in the concept that "the only fine wines are those that age well." Young, fresh, delicate, well-balanced wines can be very appealing and complementary to many foods. When we shop for food, don't we always look for freshness in fresh fruits, vegetables, meats, fish, bread and dairy products? Why should wine be an exception?

We have made wine too mysterious and complicated. The rituals of using corkscrews and ice buckets, the practice of sniffing the cork, the appearance of 'legs', the arguments about whether and how wine should breath, etc., have scared many people away from enjoying our products.

Current statistics verify that more than half of the adult population of America has ***never*** had a glass of wine. That's shameful for a nation comprised primarily of immigrants from renowned wine drinking countries, and it's partly the fault of those of us in the wine industry.

At Callaway, we hope that people will decide to drink wine because they know it consistently "tastes good." Wines they enjoy will enhance the flavors of their lunch or dinner selections, whatever foods they choose. Simply stated, drink the wine you like with the food you like.

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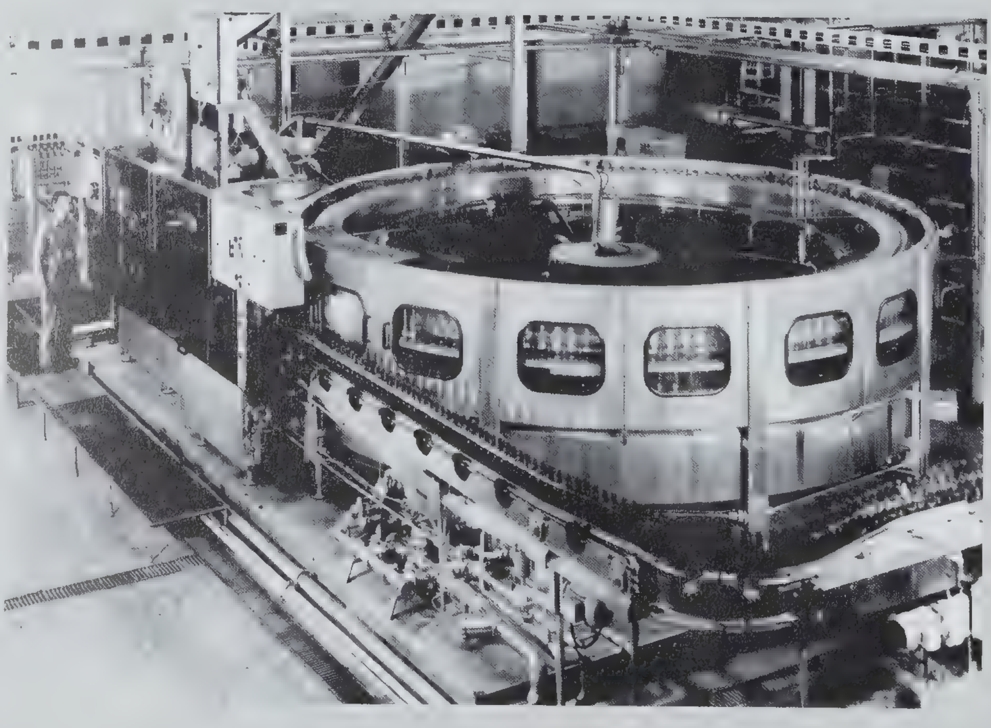

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Jerry Luper

Rutherford Hill Winery

I think people today want wines that don't have the bigness of the wines of the 1970's. I want to make wines that will be enjoyed by all kinds of people on all kinds of occasions. However, I also want them to stand the scrutiny of the most knowledgeable connoisseur.

We've heard a lot in recent years about 'food wines'. My feeling is that wine has always been 'food wine', because wine *is* food.

A lot of California wines have a coarseness to them that results from warm weather and from some overhandling in crushing and pressing that extracts too much tannin. My goal is to make white wine with a creamier texture and with far less tannic coarseness than in the past.

With Chardonnay, another challenge is presented by the new clones being used today. The older clones reached maturity at around 22° Brix, so winemakers achieved plenty of flavor at a lower sugar level. The newer Chardonnay clones have greater production capability, so they need 23° Brix to develop full flavors. Higher alcohols are the result.

We currently are doing some exciting work with clonal selection of Chardonnay, comparing three new clones with our current clonal selection.

There are many techniques for creating flavorful wines with lower tannins and alcohol, but it all starts in the vineyards. In Jaeger Vineyards just north of Napa, for example, we are experimenting with canopy control of Chardonnay.

Through leaf removal and shoot-thinning, we insure that the grape clusters receive more sunlight. Also, we modify our irrigation practices each year to reflect the season's weather conditions. Our goal is to insure that the vines are slightly stressed at harvest, in order to concentrate the character of the grapes.

In the cellar, we have adjusted the speed of the crushers and pumps to handle the grapes more carefully on the crush pad, and we have refined the programs on the presses to extract the majority of juice at the least pressure. We use a membrane tank press, which gives us maximum control over the physical factors influencing juice extraction.

In red wine production, our philosophy is to preserve maximum varietal fruit while extracting only moderate tannins. Coupled with extended barrel ageing, this produces wines of finesse and delicacy without sacrificing flavor and complexity.

To help achieve this, we have five rotary fermenters that each hold 28 tons of crushed grapes, which handle most of our red wine fermentations. They provide efficient extraction of color and flavor from the grape skins and, by shortening skin contact time, avoid the extraction of harsh tannins. Our red wines are filtered before barrel ageing.

Our Merlot is barrel-aged 22 months and our Cabernet Sauvignon a full two years. We can do this successfully because of our caves. The cave environment provides ideal conditions for 'food wine' development. Freshness is retained while extended barrel time smooths tannins.

The constant temperature (about 58°F) and humidity (about 95°F) eliminate the 'pumping' action caused by slight temperature changes in a mechanically-controlled environment. Changes in pressure accelerate the normal aeration process and prematurely age wine. Another important benefit of the caves is that the alcohol level of our red wines drops by one-half percent.

I believe extended barrel ageing is essential to production both of Chardonnay and fine red wine, because it adds complexity. Because of our cave conditions, we have also successfully introduced barrel fermentation as a way to increase complexity in our Chardonnay.

We're able to leave the Chardonnay on the lees for its entire barrel ageing, which we find softens tannins and creates the creamy texture that makes a wine more enjoyable with food.

There is a progression in our wines which, incorporating vintage influences, reflects our winemaking decision to leave the wines in the barrel longer and to blend toward a more immediately drinkable style that enhances the enjoyment of fine food.

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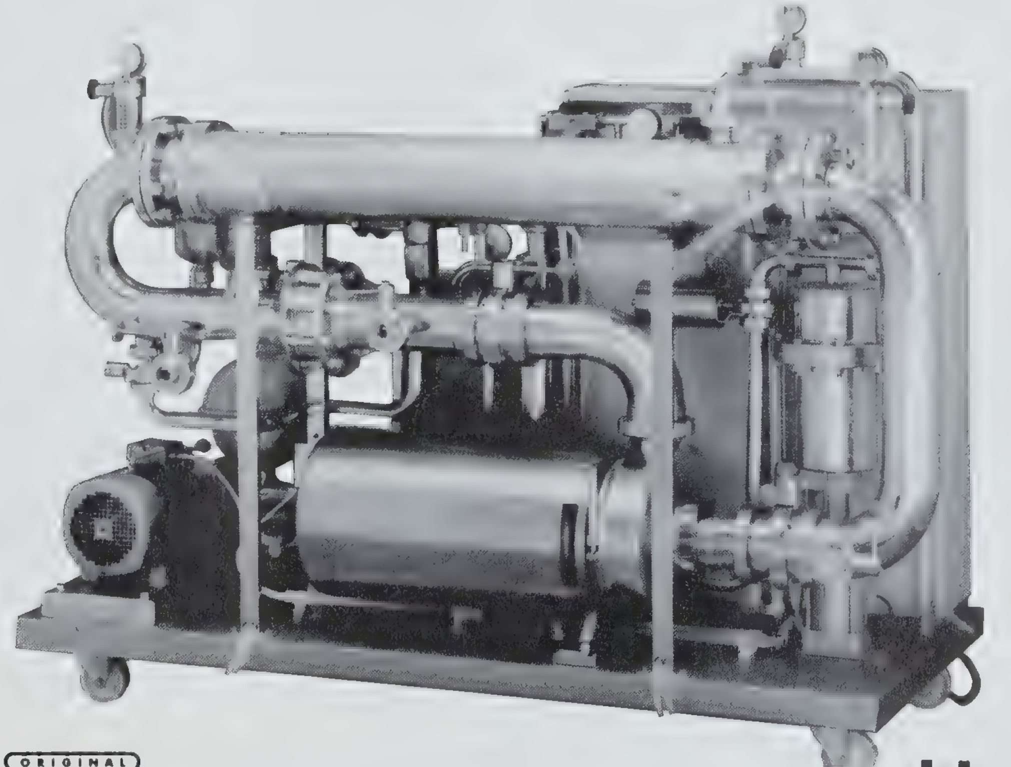

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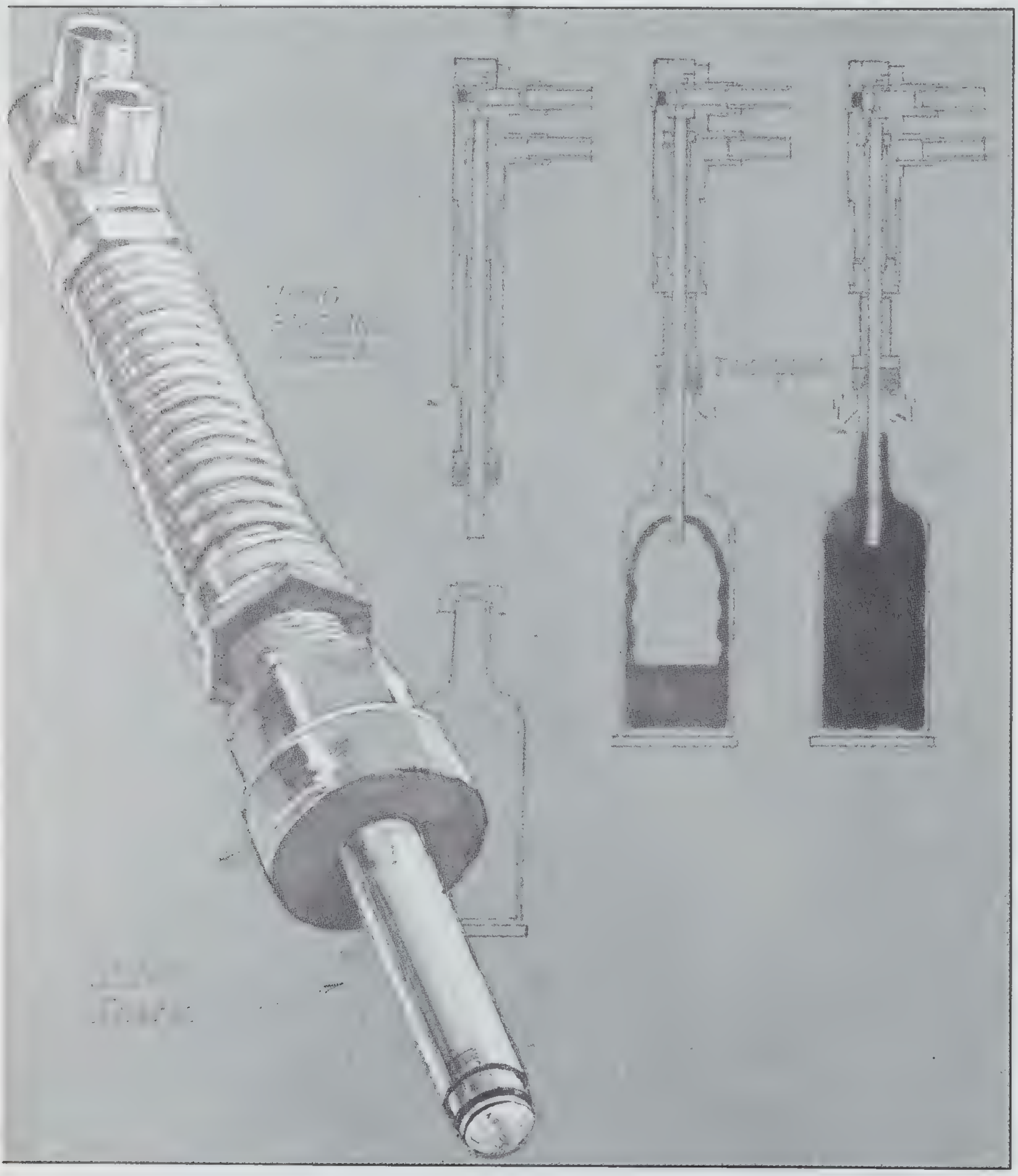

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David Ramey

Matanzas Creek Winery

Some years ago there was criticism that California wines were heavy-handed, high in alcohol, and over-oaked, tending to overpower the foods with which they were served rather than complementing them. Chardonnay seemed to be the leading culprit, and 'high alcohol' was its most offensive trait.

In response, California winemakers created 'food wine', which was praised for its lower alcohol level—12.5%, for example, instead of 13.5%. Food wine, they hoped, would win back American palates that were becoming alienated due to the heaviness of the wines.

What winemakers didn't realize was that earlier harvesting, necessary to reduce alcohol levels, also reduced flavor and character. It wasn't long before the term 'food wine' meant 'lackluster' and 'nondescript'.

The mistake made by winemakers trying to create wines well-suited to food was in attacking only high alcohol levels. It is not high alcohol that produces the impression of coarse, 'hot' wine, but a *combination* of high alcohol and high tannin content.

Most white Burgundies contain approximately 13.5% alcohol. A good (i.e., ripe) vintage or a wine from a great vineyard will often range from 14% to 14.5%. Yet these wines are seldom criticized for being heavy or alcoholic. Why?

Typically in Burgundy, grapes are transported, crushed, pumped and pressed very gently, so that little tannin is extracted from the grape skins. Yet in California, the extreme importance of minimal tannin content in white wines has not been realized. In fact, the opposite view has been held, applying to white wines what might be called 'red-wine logic': that grape tannins are beneficial to, and an anti-oxidant in, white wines, as they are in red, and that they assist in ageing.

Nothing could be further from the truth. It is no accident that the criticisms of California Chardonnays for being hot and coarse, for overwhelming rather than complementing food, and for ageing poorly, coincided with the peak of the skin-contact fad—crushing the grapes and leaving them to macerate before pressing. This production method *increases* tannin content and creates wines that lack classic (French) delicacy.

If white wines are made to emphasize delicacy by minimizing tannin content, then higher alcohol levels are not perceived. Focusing on delicacy allows grapes to be harvested when they are fully mature, resulting in wines that are full-flavored and which remain true to California's birthright of ripe fruit flavor. Table wines will enhance the flavors of any well-prepared dish, rather than shrinking from or overwhelming food.■

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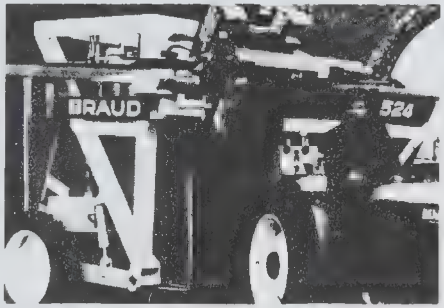

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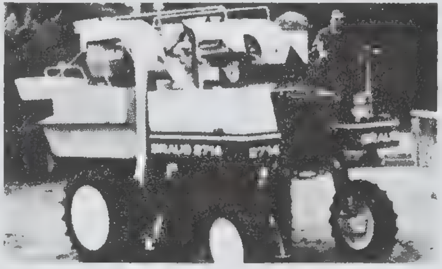
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Essence of *Guerrilla* Marketing

Jay Conrad Levinson

Wine marketing—indeed, most product marketing—used to be an art owing much to theory and guesswork. Thanks to advancements in psychology, however, wine marketing today is becoming more of a science.

That's good news to guerrilla wine marketers who want each marketing dollar to do the work of ten. To realize this goal, one first must understand that most purchasing decisions are made unconsciously.

Psychologists have shared with marketing professionals techniques for accessing the unconscious of prospective customers, in order to convert them into paying customers for your wine.

Key is repetition

The key to penetrating and motivating the unconscious is simple: it's repetition. This means you shouldn't change your message, your market, or your media. Give them a chance to work with each other. Repeat the glories of your wines often.

We have the psychologists to thank for telling us that half our prospects are left-brained people—those influenced by logic and reason. The other half are right-brained people—those motivated more by emotional, aesthetic approaches.

Your marketing campaign should be directed toward **all** of your prospects. Marketing materials must be rational, logical, emotional, and aesthetic. If you fail to do this, you'll miss half your potential audience, which could prove disastrous.

People require identity

People want to belong; they require a sense of identity. You can make your wines and winery part of that identity. Communicate with your customers through the mail, providing them with inside information on your wines and opportunities to save money on them. Develop brochures for retail distribution that will make consumers of your wine members of your 'club'.

Create through your marketing a club-like atmosphere for the buying, serving, and enjoying of your wines, then invite your customers into the club. Do this through special 'club members only' offers, gifts with your winery name on them, (*and* the name of the club member) Christmas cards, etc. The possibilities are endless. Consider the opportunities provided by labels, back labels, cases, signs, ads, hangtags, brochures, direct mailings, tasting room activities, and events at the winery.

Human Bond and Business Bond

In order to be successful, there are two bonds you must create between your winery and your customer. The first is the human bond. The second is the business bond. Connect first as human beings, talking about things other than business. Then develop the business relationship, and keep it warm and cozy.

The science of pyschology tells us that there are two basic schools of marketing:

1. *Freudian* marketing is based upon the principle of attitudinal change. It requires repeated exposure to the marketing message, and it works slowly, but surely. It is the oldest school of marketing theory--and the primary one used to sell wine—but, as of the early 1980's, no longer the predominant one.
2. *Skinnerian* marketing is based upon B.F. Skinner's theories of behavior modification. "Act by June 10 to save 75%!" is a good example of the Skinnerian approach. It works fast or not at all. At least you know. Skinnerian marketing techniques work well through the mail, in restaurants and bars, and at the point-of-purchase in retail outlets.

Which method works best? The answer is obvious to a guerrilla wine marketer: a combination of the two. Soften them up with Freud, then win them over with Skinner. ■

Jay Conrad Levinson is the author of GUERRILLA MARKETING. His "Guerrilla Marketing System & Newsletter," books, tapes and consulting services may be obtained from Guerrilla Marketing International, PO Box 1336, Mill Valley, CA, 94942. Or call toll-free 1-800-621-0851 (Ext 140).

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>
> ***Le Père Séchard***, Honoré de Balzac, 1821

Don Blackburn

Quality in wine-growing can't be reduced to a pat formula, but it can be discussed in light of the various factors that contribute to it. In Burgundy, quality is particularly important for several reasons:

1) The wines are very expensive.

2) They have been famous since before Columbus discovered America and have an almost mystical appeal.

3) Fine wine production in Burgundy is much more problematical than in other French winegrowing regions. This explains why the region produces so many mediocre wines.

During his extended stay in France (1784-1789), Thomas Jefferson noted that the best French vineyards were characterized by poor soil, old vines, and stingy use of fertilizer. This concisely expresses the key elements of the French view of viticulture.

Old vines are much more highly regarded in the Old World than in the New World. Growers know that older vines respond better to late-season stress, because they carry a smaller crop and benefit from a more extensive root system.

Old vineyards also tend to ripen earlier. This is especially important in Côte d'Or, where maturation is threatened by an unforgiving climate. Moreover, the moderate vigor of old vines encourages the production of sturdy wines which age well.

A typical Burgundian domaine has a long-term replanting program intended to maintain adequate yields by insuring that the bulk of the vineyard is always in production. At all times, the grower will try to have some young vines (0 to 15 years), some adult vines (15 to 30 years), and some mature vines. The young vines yield the most; the old ones, the best.

Everyone agrees on the latter point. Opinions vary, however,

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on what constitutes old age in a vineyard. The modern trend is to tear out vines at about 40 years in order to maintain a yield of at least three tons/acre in the majority of one's plots.

Traditional growers prefer to wait until 50 years or more, as long as yield doesn't fall below 1.5 to two tons/acre. These vignerons recognize their need to maintain a proportion of young vines, but they regulate the replacement rate so that as much as ⅓ of their vines are old enough to produce the best wine.

The same approach is simple and effective in Bordeaux, but in Burgundy a 25-acre holding produces many different wines. If I own 15 plots, none of which is larger than four acres, it isn't practical to replant pieces of each so that they all have the proper proportion of new and old vines.

On the other hand, if I tear out and replant my Clos de la Roche, leaving my Clos St. Denis untouched at age 40, my customers will perceive a sudden drop-off in the quality of the wine produced from the former vineyard, while the latter will appear to become my best wine.

Since Clos de la Roche is a more famous and expensive wine, this would be an awkward situation indeed. Certainly, no self-respecting Burgundian would consider switching the two wines to maintain the superior reputation of the more famous vineyard. That would be illegal.

In general, the Burgundian grower establishes and follows a replanting program in order to maintain a balance of old and new vines. He thereby assures the long-term success of his domain. This plan is at the heart of the vigneron's concept of wine-growing, and it is a major quality indicator.

In New World viticultural regions, an abundance of young vines promotes a different perspective. There are few vineyards more than 25 years old, and they are likely to be 'out of date' due to obsolete spacing and rootstock, or some other rapidly evolving factor.

In Burgundy, another way to maximize long-term quality is to leave the ground fallow after ripping out a vineyard, thus allowing the soil to regenerate itself. Four to seven years of appropriate cover crop between two vine generations can be extremely helpful in nurturing the productivity of soils which have borne vineyards for twenty or thirty human generations. No fertilization program can provide such a long-term benefit.

Since World War II, growers' increasingly acute cash flow needs have made leaving land fallow unfeasible. A few growers wait one or two years, wishing they could wait longer. Most just replant the following spring. Interestingly, recent fears of subterranean pathogens have encouraged soil fumigation, forcing growers to wait a full year before replanting.

Use of Fertilizer

It has been presumed through the centuries that grapevines require poor soils, so agronomists have always been puzzled that so many different soil types produce fine wine. Some theorize that Bordeaux's mild climate balances its extremely poor soils, whereas Burgundy's comparatively rich soils are checked by its more hostile climate.

This is where fertilization comes into play in Côte d'Or, for its soils respond avidly to mineral amendments, and abuse in this area can upset a vineyard's natural balance.

From before the Middle Ages, viticultural soils were improved by the addition of bottomland earth. This was viewed as an appropriate, natural addition. Yet, 18th-century chroniclers bemoaned the corruption of Côte de Nuits soils by this 'terrage', which they feared would compromise the vineyard's ability to impart its unique character to the wine. It was considered by some to be a perversion of the necessary practice of combatting erosion by carrying soil up from the bottom of the vineyard.

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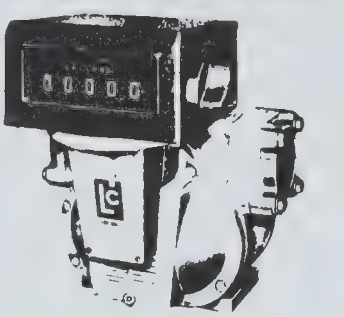

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Occasionally, vignerons would use manure as fertilizer, but until 1850 this was considered risky, because it might add 'off-flavors' to the wine. As the fungal and parasite blights known as 'the Phylloxera Crisis' swept in successive waves over Europe, growers began discarding traditions in a desperate attempt to keep their vineyards in production.

Among the ideas derived from previous innovations were the planting of vines in rows (rather than haphazardly) and the use of a horse-drawn plow in place of a stooped vigneron with a hoe. The horse brought manure, and no off-flavors resulted. This opened the door to fertilization more efficient than transporting tons of soil.

As mineral fertilizers became available, they were tested in viticulture and shown to be helpful in bringing young vineyards into production. However, growers found that their benefits were less complete and shorter-lived than those of manure, in the same way that a 'sugar fix' is less wholesome than a full meal.

The Actual Culprit

Today, soil fertilization is the major factor in the slide in quality of Burgundy wine. Other abuses could not produce consistent overproduction without these pivotal amendments.

Choosing to plant a particular strain of Pinot noir or Chardonnay (*PWV* Sept/Oct and Nov/Dec 1985) in a given habitat sets the stage for the degree of vigor in his vines that a Burgundian vigneron will face throughout their lives. If he endows his vineyard with vigor from the start, he can maintain it through a high degree of soil fertility achieved or augmented by annual mineral amendments.

Some oldtimers, witnessing the trends of the younger generation, are distressed to see a vineyard spit fire for 35 years and then shrivel up like a gluttonous old lecher after too much debauchery.

Agronomists concur that recent overuse of potassium-based fertilizers has led to detrimental increases in grape pH. This excess potassium appears to resist natural depletion and may stay around for a long time.

It also is quite obvious that abuse of nitrogen fertilizer has led to greater vine vigor, which acts in tandem with genetic selection to increase vine fertility.

These two stimuli bring greater yields, slower ripening, and—further down the line—boring wines. The evidence indicates that soil fertilization is the quality factor to which the French government has paid the least attention.

Policing Viticulture

The French have spent eight years corralling various quality factors. Inspectors can easily insure that spacing regulations are respected. They oversee viticultural experiments, and count barrels, tanks, and bottles to confirm adherence to production limits per hectare. However, they do not keep tabs on everything growers spread on the ground.

Were they willing and able to regulate soil amendments and to establish rational standards (a tall order), they could force vignerons to moderate fertilization practices and to plant less vigorous strains. Such a development is highly unlikely because of the difficulties of measuring grower compliance and taking into account site variations. (For example, Bâtard Montrachet has naturally richer soil than Montrachet).

I mention this not to advocate new regulations, but rather to identify quality factors which go unmentioned by Burgundy critics intent on pursuing the red herring of chaptalization.

Yield

In the previous installment (*PWV*: Jan/Feb 1988), I traced the evolution of yield from a 17th-century average of about one ton/acre to today's three to four tons/acre. Let's now examine the same issue without the numbers.

The traditional presumption is that vineyards produce their best wines in years of low yield, but this is a deceptive oversimplification. If we were to rate annual yields quantitatively on a 1 to 10 scale, the finest vintages probably would range from 2 to 8 in yield.

In Burgundy, low yields haven't always come from vines bearing light loads of small clusters with tiny, sweet, flavorful grapes. Quite often, small crops have occurred when diseases gained the upper hand. Some one ton/acre crops have come in at 17° Brix.

Also, some abundant crops have resulted in washed-out red wines and thin, insipid whites. This demonstrates that crop level can only be related to wine quality within the context of all the factors affecting vine production.

Vine Variation

Until the mid-20th century, Burgundian vineyards had so many strains of a given variety interplanted that the mishmash did not allow growers to calculate a valid yield per vine. One vine might have quadruple the crop of its immediate neighbor, which could be a distant cousin genetically.

Today, a forward-thinking grower might say, "My grandfather produced 15 hl/ha with ⅔ of his vines infertile, so why should my wine be inferior when every one of my vines contributes to my 45 hl/ha (three tons/acre)?"

I remember one grower in Chambolle Musigny telling his son he was going to tear out his oldest vineyard plot. "But Dad," the son protested, "it makes the best wine." To this his father responded, "I could send a guy out on a bicycle with a basket to pick it, so how much does that vineyard help our wine quality?"

In Burgundy, there are always significant crop variations among growers. One should excuse the fellow who has been stuck, through inheritance or purchase, with someone else's poor management. One can then take a hard look at the others.

The best vignerons tend to be those whose yields are routinely somewhat below the regional average. Their entire method favors moderation. They do not seek to have the lushest vineyard, nor are they wedded to the notion that a true 'artiste' must have the most scraggly vines in the area.

This premise—that the production of great Burgundies requires modest yields—does not alter the fact that, in other regions, certain sought-after wines may in fact come from vineyards with six to seven tons/acre yield. Quality in France's Grand Cru approach, however, exists independently of hype, sales figures, and the democratic contention that it should be defined by the public.

Allegiance to quality engenders a long-term perspective. Fine wine producers in Burgundy, as in Bordeaux, want to make wines which will age gracefully in the bottle for many years, a result which modern equipment and new oak alone cannot guarantee.

Other Quality Factors

Beyond those quality factors mentioned above, there are others that allegedly play an important role in the production of fine Burgundies.

How does limestone in the soil help the Burgundian varieties? I have observed in recent years a continual rise in quality of New World Pinot Noirs and Chardonnays. I suspect that some non-limestone soils have physio-chemical profiles similar to those of Burgundian soils. Perhaps the role attributed to limestone is the result of some unknown factor. In any case, I do believe that the calcareous component of Côte d'Or soils influences the nature of Burgundy wine.

The 'suffering vine' is said to be another quality factor. Previous articles in this series examined vigor as the main theme of viticulture. It makes sense that the vine's inherent exuberance should be balanced by some specific adversity and that this would explain how habitat and management practices establish the uniqueness of each wine.

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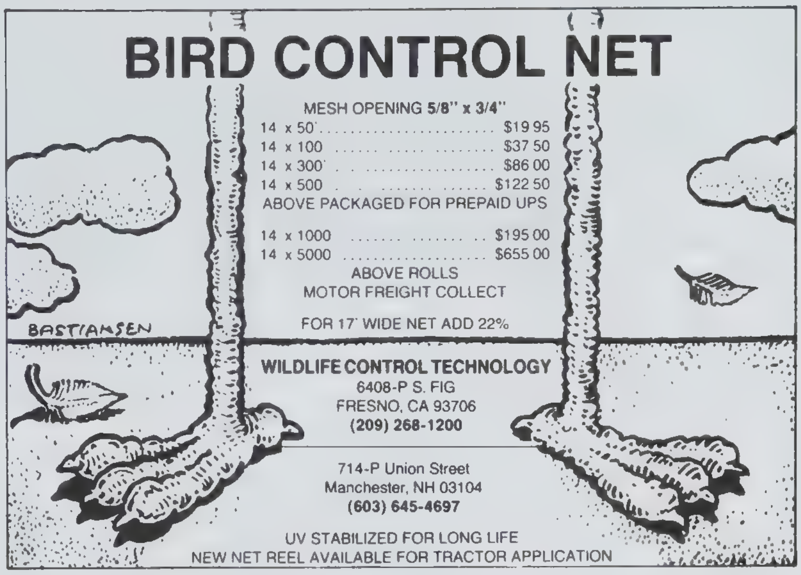

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Who can unravel the myriad effects of these assailants? When do these factors affect quality and in what interactive ways? How could Côte de Nuits vineyards devastated by hail in 1928 produce such great wines a year later? Might there exist a beneficial virus–one that devigorizes without crippling?

In light of all these unanswered questions, it does not seem surprising that our technology has not successfully grappled with the 'suffering vine' issue. To those of us who make wine by the numbers, it seems like hocus-pocus.

Quality From Another Viewpoint

Having examined the technical side of wine quality, we must turn to the more important perspective–wine as a consumer product. Vignerons in Côte d'Or–and in most French viticultural regions–have taught their customers to appreciate wine with restrained varietal character. Growers stress instead the local (town) or vineyard (cru) character, which they consider more refined and unique.

Grapey aromas and flavors are suppressed in favor of those emphasized during vinification and cellaring. It is noteworthy that some non-European Enology professors teach students that 'vinous' character in wine is a flaw to be avoided.

French winemakers do not, in fact, attempt to make wine with a generic 'vinous' (winey) character. Instead, they aim for an eclectic set of aromas and flavors that suggest the many aspects of human olfaction encountered in daily life.

Few practically-minded French winemakers see great value in categorizing these sensations. The effort is thought to restrict the scope of organoleptic terminology and is deemed a counter-productive enterprise.

Aromas associated with a particular viticultural site are no more important than the characteristic textures that site imparts to its wines. Wines are not judged primarily by their aromas and flavors, but rather in terms of the overall impression they convey to the consumer. Descriptions are understood to be subjective, interpretive, even metaphorical.

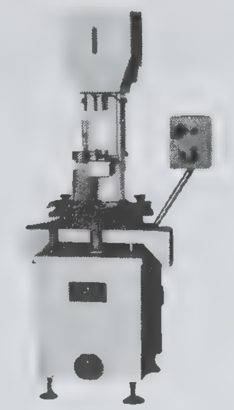
Organoleptic goals are best achieved by aligning viticultural and enological practices, so that grapes, must and wine proceed in a consistent direction. A Burgundian Chardonnay undergoes malolactic fermentation, lees contact, stirring, and post-malolactic splash aeration, and all these techniques combine to lessen varietal character. Thus, it would not be logical to employ viticultural practices (*e.g.*, high vigor) that maximize varietal character for that same wine.

These principles apply to Burgundies and Bordeaux as 'vinous' wines, and also to non-vinous, aromatic wines such as Vin d'Alsace, and the Mediterranean Muscats–wines in which the grape's signature is protected and highlighted.

Determining a wine's style is a major step toward realizing its quality potential. The Burgundians did this progressively over centuries, and their style is now firmly established. Individual growers do have a little leeway to find their own niche, but they would find public acceptance difficult if they were to stray too far.

In the New World, we are less limited in the styles we choose, but we also need to align our production variables in order to create a congruent wine.

This is where the winegrower's wisdom is put to its greatest test–conceptualizing a wine style and then making all the pieces of the puzzle conform to it. Consumers respond to a successful effort, but remain unaware of the thought behind it. To them, it all seems natural and effortless. ■



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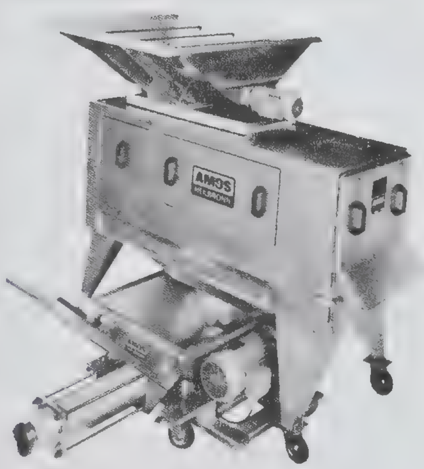

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England's Changing Viticultural Landscape

Gary Peters
Department Of Geography
California State University, Long Beach

Although most people in the British Isles today are still unaware of the difference between British wine and English wine, a steadfast group of dedicated viticulturists and winemakers has struggled against the odds to bring winegrowing to English soil.

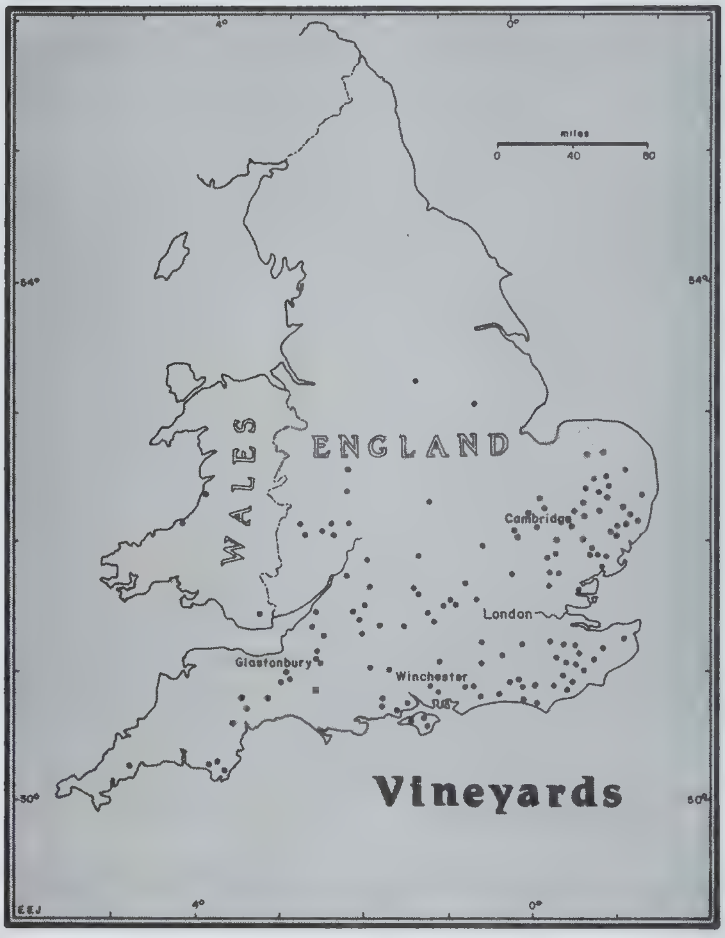
Whereas British wine is made from the juice of imported grapes, English wine is made only from grapes grown in England. The focus of this report is the changing English viticultural landscape during the past four decades.

History

Viticulture is hardly new to England—the earliest vineyards were planted by the Romans during the third century A.D. Although viticulture fell into a severe decline after the Romans departed, it was rejuvenated in the 11th century following the Norman Conquest.

Published in 1085 A.D., the Domesday book recorded the presence of 38 vineyards in England, some of which were as large as 10 acres. French winegrowers came to England, and vineyards for sacramental wines were planted at many French abbeys, including those at Westminster, Gloucester, Tewkesbury, and Bury St. Edmunds.

Unfortunately, events were gradually to create another decline, followed by the virtual disappearance of viticulture from England. First, Henry II, after inheriting Anjou and Touraine from his father and Normandy from his mother, gained all of



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Bordeaux as a result of his marriage to Eleanor of Aquitaine in 1152. Subsequently, French wines flowed into England at prices that made English viticulture uneconomical.

Second, England's climate took a turn for the worse around the middle of the 14th century. By the middle of the next century, a period known as 'The Little Ice Age' had begun, and it lasted until the middle of the 19th century. As the climate turned cooler, it became increasingly difficult to ripen grapes, and what viticulture remained to compete with French imports gradually disappeared.

Modern English viticulture began after World War II. It expanded hesitantly at first, but growth has accelerated during the past 10 to 15 years. Today there are more than 220 vineyards and approximately 1,300 acres of vines (more than in Idaho, but only ⅓ of the acreage in Oregon). Average vineyard size is about six acres, and few vineyards exceed twelve.

As the accompanying map indicates, vineyards are concentrated in southern England and Wales. What the map cannot show is the difficulty of finding sites that have combinations of soil and microclimate adequate for viticultural pursuits.

Climate

England has what is known as a Marine West Coast climate, which prevails in middle latitudes on the west coasts of continents, typically on the poleward side of the Mediterranean climate. The Marine West Coast climate is quite moist, with precipitation occurring all year, but temperatures are relatively mild.

The Marine West Coast climate extends inland in Europe to encompass most of the prime viticultural areas of France and Germany. Viticultural conditions in England are most like those in northern Germany, thus the importance in England of many German grape varieties.

Because Germany is farther from the sea, however, there are two notable climatic differences between the countries. In England, summer precipitation and cloud cover are more common than in comparable German wine regions such as the Rheingau or the Mosel Valley, making the English harvest somewhat more difficult.

In turn, these conditions reduce the average amount of available sunlight. Thus the average summer temperature in English vineyards is lower than in German viticultural regions, explaining why the noble Riesling will not ripen in England.

Cultivars

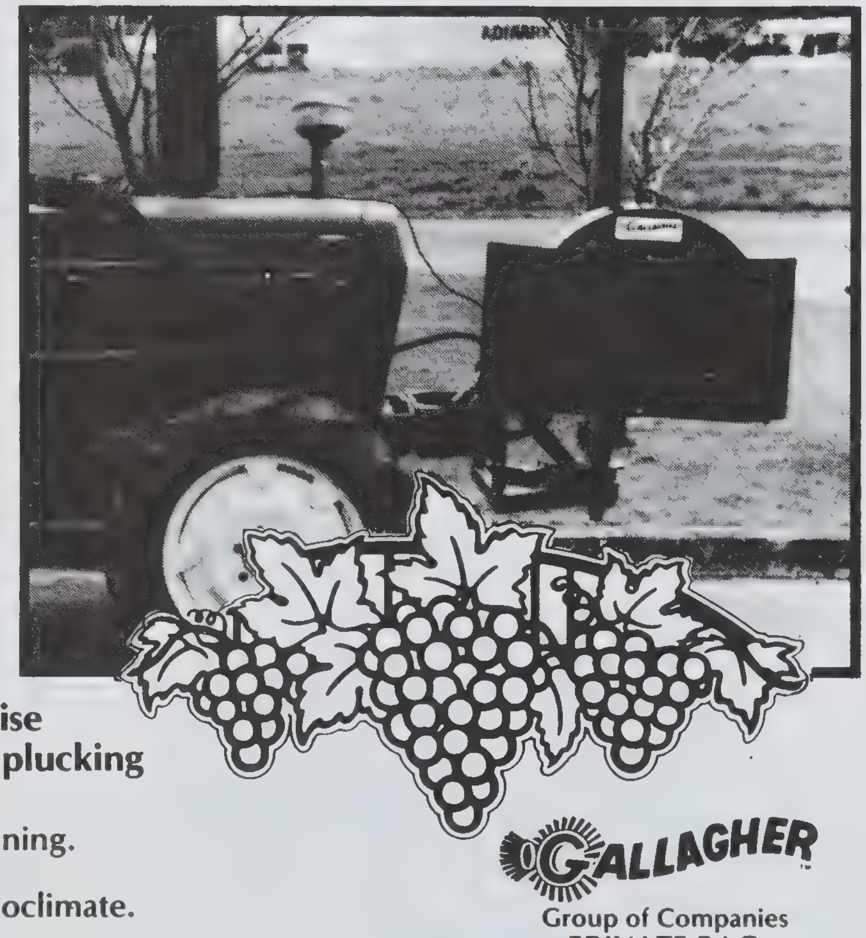
English winegrowers today have a wide array of varieties from which to choose, as they seek to match microclimates with appropriate grape types. Their choices include established varieties of *vitis vinifera*, crosses between such varieties, and new vinifera/non-vinifera hybrids.

Given England's narrow range of viticultural environments, its winegrowers have adopted white cultivars almost exclusively. The cool growing season (typically a low Region I in Winkler's heat summation system), with its frequent rain and cloud cover, clearly restricts the choice of acceptable cultivars.

Ranked according to the number of vineyards in which they are planted, the leading English cultivars today are: Muller-Thurgau, more than 115 vineyards; Seyval Blanc, at least 65 vineyards; Reichensteiner, more than 50 vineyards; Madeleine Angevine, 50 vineyards; and Huxelrebe, 45 vineyards. Muller-Thurgau is the leader by far in acreage planted, while Reichensteiner recently has surpassed Seyval Blanc for second place.

There are small experimental plantings of red wine cultivars such as Pinot noir, Pinot Meunier, and Wrotham Pinot, and little-known white wine cultivars such as Auxerrois, Bacchus, Seibel, Siegerrebe, and Ortega.

The major English grape varieties are almost unknown on



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the west coast of the U.S., except in certain wine regions of western Washington State (Nooksack, Puyallup, and Bainbridge Island). Yet Muller-Thurgau is now the most widely-planted cultivar in Germany and perhaps the best-known of all modern crosses between *vitis vinifera* varieties (once thought to be a cross between Silvaner and Riesling, it may instead be a cross between two clones of Riesling).

Though Riesling will not ripen in England, Muller-Thurgau's early ripening makes it a good substitute. Growers do have problems with it--the variety is susceptible to blackrot, peronospera, and *Roter Brunner*—but they also report a low incidence of *coulure*. Best results with Muller-Thurgau in English vineyards are obtained from a combination of cane-pruning and a Guyot training system.

Seyval Blanc was first planted in England in the 1950's. It is a good producer, but its wine is rather neutral in flavor. It also

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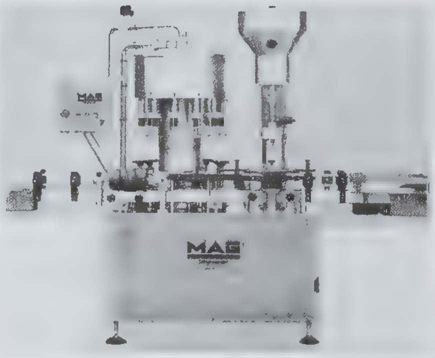

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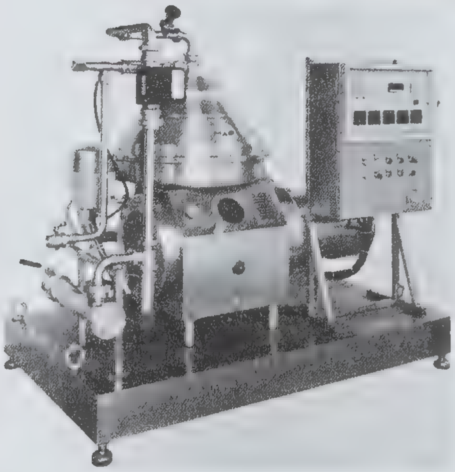

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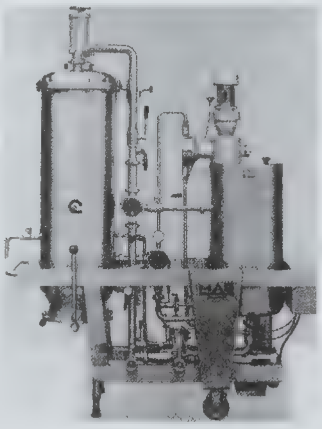

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has difficulty setting a good crop when the weather at flowering is too cool and wet.

Wines made from Seyval Blanc usually are blended with those made from Muller-Thurgau, and this combination currently forms the backbone of English viticulture. However, Seyval Blanc's parentage may pose a long-term problem, because hybrids are frowned upon by the European Economic Community, whose commerce in wine English producers hope to join.

Reichensteiner, developed at Geisenheim in 1978, is a cross between Muller-Thurgau and an earlier crossing of Madeleine Angevine and Italian Early Calabrese (all *vitis vinifera*). The vine and its wine resemble Muller-Thurgau, although it is less susceptible to disease and rot. Some English vineyards have managed to make very respectable wines from this cultivar, and its future in English viticulture appears bright.

Madeleine Angevine is a cross between Precoce de Malingre and Madeleine Royale. It produces decent wines in England, but it has problems with *coulure*, and in cooler sites it gives very low yields. The best wines from this variety have a noticeable Muscat aroma.

Huxelrebe, a cross between Chasselas and Courtillier Musque, was first developed in 1927. The flavor of its wine also suggests Muscat.

Vine spacing in English vineyards depends on several factors, primarily local soil characteristics and trellising methods. Most vineyards use four or five foot spacing between rows, although six feet or more is not uncommon.

Most vineyards are spur-pruned and employ a variation of the Guyot system. A few growers have experimented with the Geneva Double Curtain training system, which requires wider spacing.

Even though phylloxera is thought to have entered France and the rest of Europe through the famous Kew Gardens outside London, England currently is phylloxera-free. As a result, growers can plant *vitis vinifera* vines on their own roots, a much less costly option than purchasing phylloxera-resistant rootstock. Many growers are doing so, gambling that phylloxera will not reach English vineyards.

At the same time, as viticulture in England grows in importance, growers are experimenting with various resistant rootstocks. Currently, the best bets seem to be Kober 125AA and S04, which appear best-suited to the micro-environments of English vineyards.

In England, vine growth usually begins in May, although bud break may occur in late April in favorably situated vineyards. Flowering typically occurs in June and July, with most grapes harvested in October.

A Challenging Future

Given the latitude and climate of England and Wales, it is a credit to the tenacity of modern winegrowers that viticulture exists at all in these lands. Though there can be no doubt about their dedication, and though many English wines today are quite good, winemakers here face further challenges.

While they search for better matches between cultivars and micro-environments, per capita wine consumption in France and Italy is falling. As a result, these countries are experiencing wine surpluses, prompting them to sell their wines in England at bargain prices.

German wines, which are most directly competitive with English wines—due to similar grape types and wine characteristics—are widely available at prices that typically are lower than those for comparable English wines.

Thus, a major question facing English winegrowers is whether wine drinkers in the British Isles will pay a premium to support their own small wine industry. ■

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Max Goldman is ASEV Merit Recipient

Max Goldman, owner/operator of York Mountain Winery in Templeton, CA, will receive the 1988 Merit Award from the American Society for Enology and Viticulture at the awards banquet to be held June 24, 1988 during the Society's annual meeting at Bally's Hotel in Reno, NV. Goldman will speak on "Very Much Done, Very Much to Do" in the wine industry at the banquet.

The Merit Award is given to an outstanding member in the field of enology and viticulture for significant contributions to the wine industry as well as to the Society. Goldman is a past president and charter member of the Society.

In addition, he has been past Chairman and charter member of the Technical Advisory Committee of the Wine Institute and currently serves on the Institute's Board of Directors, Energy and Environmental Studies Committee and Vinicultural Research Committee. He is a member of the American Chemical Society and is a registered Chemical Engineer in the state of California.

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A native of Los Angeles, CA, Goldman graduated from Whittier College in 1933 with a degree in Chemistry and Physics. His career began as a chemist for the Roma Wine Co., in Lodi, CA. He moved on to vice president of production at Great Western Champagne in Hammondsport, NY and later was vice president of production at Bohemian Dist. Co., in Los Angeles, CA.

In 1970, he acquired York Mountain Winery which was only producing a few hundred cases/year. He is still active along with his son and daughter who have built the winery up to 6,000 cases/year. The winery continues to increase sales by 10 to 15%/year. Sales direct from the winery were 5,000 cases in 1987.

Production at York Mountain is 50% red and 50% white. Merlot is the most interesting wine to Goldman. Estate grown grapes supply ⅓ of the winery's needs. Other products include Chardonnay, Chenin Blanc, Pinot Noir, Zinfandel, Port and Sherry.

The ASEV Journal has published the following papers by Goldman: Factors influencing the rate of CO_2 formation fermented in bottled champagne, Rate of CO_2 formation at low temperature in bottle fermented champagne, and Relationship of fusel oils, aldehydes and esters in distilling material, high proof brandy and dessert wines. ■

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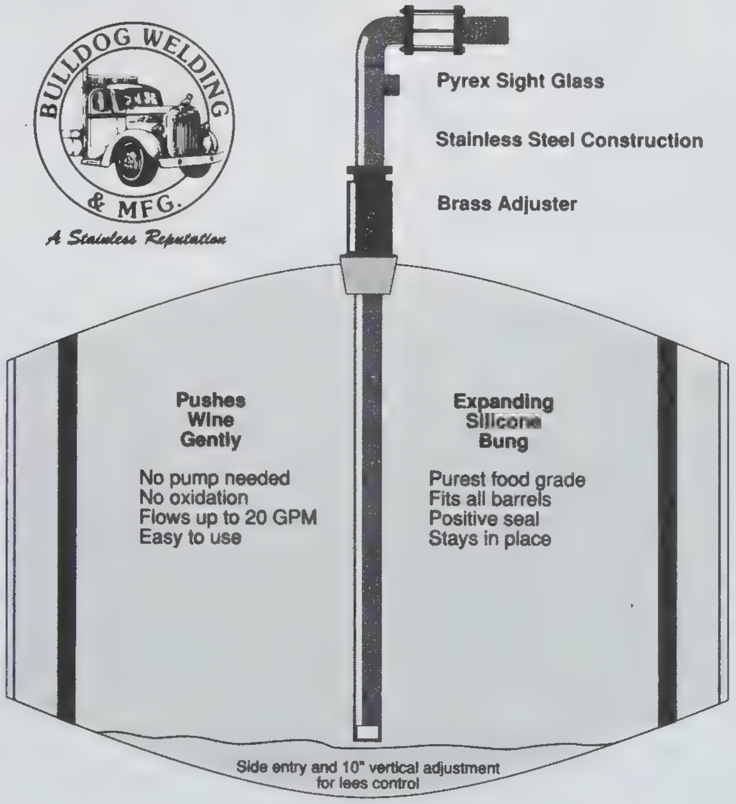

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Eastern Wine Publications

Hand riddling at Domaine Chandon

Photo by Fred Lyon

Méthode Champenoise

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Remuage

When a sparkling wine producer decides that his wine has sufficiently matured on the yeast in the bottle, the process of removing the sediment begins. The wine should be left in contact with the yeast at least a year before disgorging in order to allow the yeast cells to die and to permit the development of a Champagne bouquet.

Remuage (riddling) is the process by which gravity conveys the sediment to the neck of the bottle. Proper riddling is effected by causing the heavy particles to ride over the lighter, more flocculent ones, bringing them down into the neck of the bottle.

Sediment in the bottle is not homogeneous, as it is composed of yeast, protein material, riddling aids and possibly some bitartrate. The heavier substances are fairly willing to descend, but the lighter particles tend to float easily up into the wine. This makes the riddling process significantly more difficult. The longer the yeast is in contact with the wine, the more homogeneous is the sediment.

The following are some of the factors affecting riddling ease (the last item is perhaps the most important): cuvee chemistry, yeast species and strain, yeast volume, fermentation rate, stor-

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age conditions, riddling aids, riddling method, the skill of the remeur, and unknown factors.

Why certain wines and certain vintages riddle more easily than others is not fully understood.

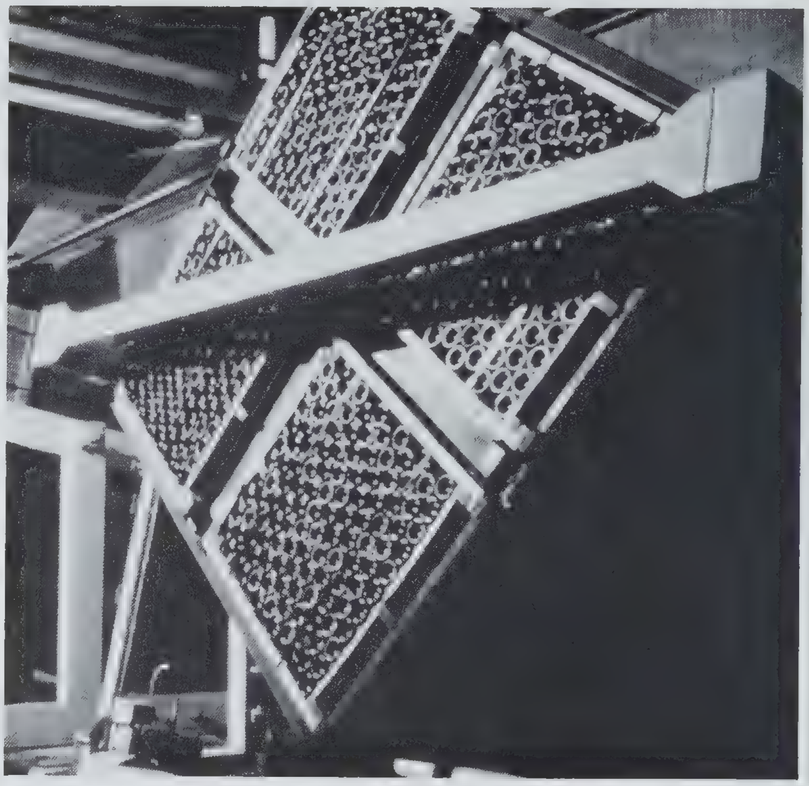
When the decision to riddle is made, bottles are usually shaken, either by hand or by machine. This is done to dislodge the yeast from the glass in order to enhance riddling ease. Indeed, some producers shake their bottles once a year. After shaking, the bottles are allowed to rest before riddling, in order to let the lees settle.

This practice of *poignetage* removes crusted yeast from the glass, which helps to prevent glass staining and aids in the detection of leakers. If the bottles are shaken excessively, however, lipids (fats) within the yeast cells may separate from the yeast walls and float to the surface.

Reduction of sulfates or sulfides leads to free sulfur dioxide which is stored with these lipids. If the bottle fermentation occurs with an excess of oxygen, enough fat may be produced to form egg-shaped marks on the side of the bottle. Neither disgorging nor filtration will remove this fat (the cause of masking or solids sticking to the sides of the bottle has been reviewed by Maujean et al. 1978).

It is important that air currents in the riddling area be minimized. Air movements will cause convection currents within the bottle, which makes riddling more difficult. The use of air conditioners may therefore be unwise. Temperature may also affect riddling, which occurs more easily at 65°F than at cooler cellar temperatures (Zepponi 1983).

Riddling is performed by hand, automatically, or semiautomatically. The widow Clicquot is credited with inventing the hand riddling method, which has changed little over the centuries. Bottles are loaded into *pupitres* (A frames), which are 6 feet tall, 10 feet wide, and spread out approximately 40–42 inches. Each holds 60 bottles per side.



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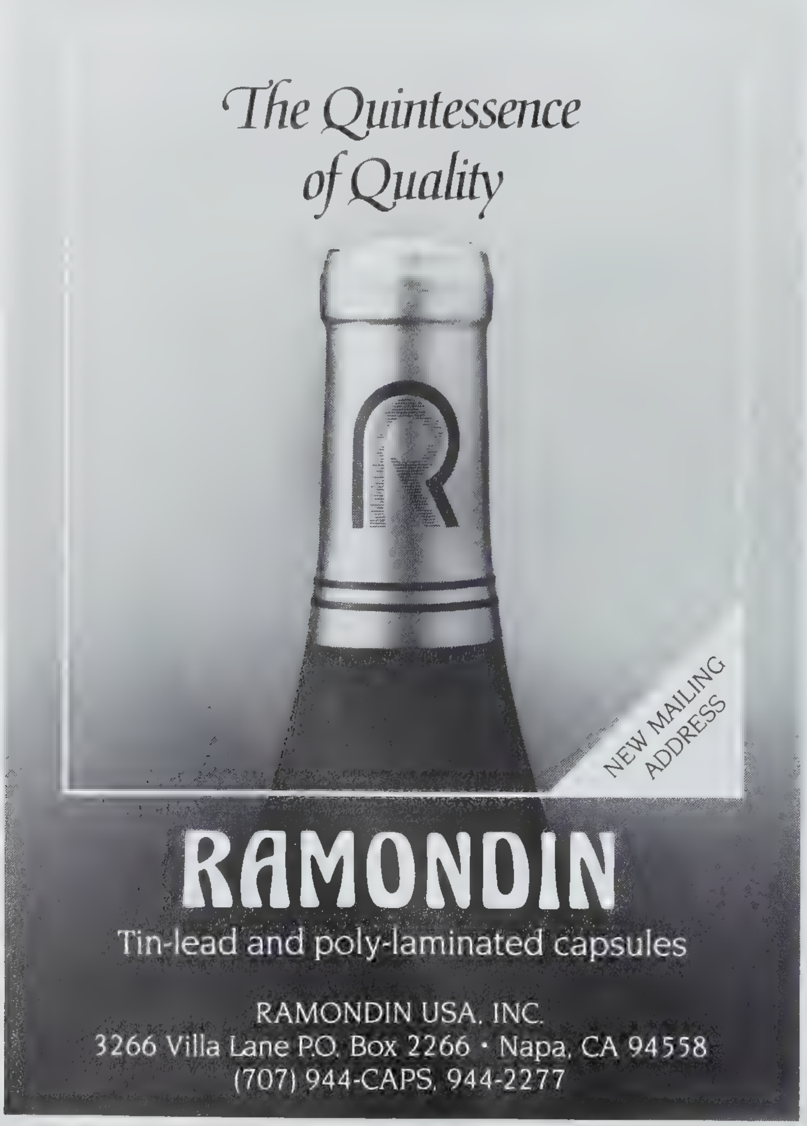
Hand remuage has three phases. The bottles first are rotated, then oscillated, and finally tilted slightly upward. It takes years to learn how to perform these maneuvers efficiently and effectively.



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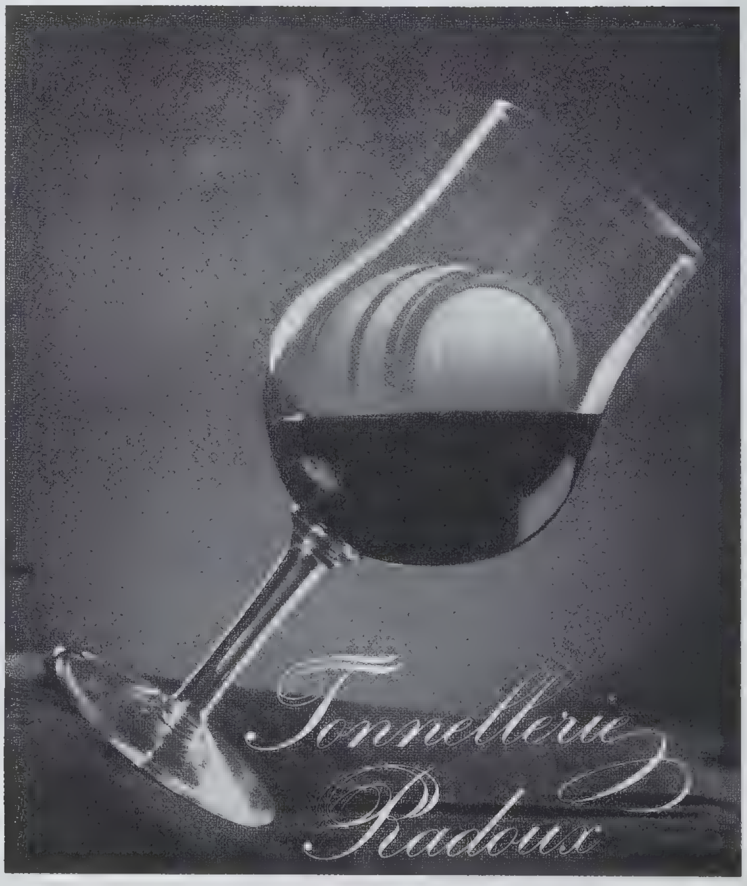

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One of several typical riddling procedures is to position the bottles at a 25–30° angle from horizontal. Two bottles at a time are grasped, lifted approximately ¼ inch from the rack, and twisted rapidly ⅛ turn to the right, then back to the left. They then are placed back into the rack ¼ inch to the right of their original position and at a slightly steeper angle.

This twist / counter-twist / abrupt stop movement creates a backspin, causing the liquid to move one way and the glass another. It insures that the main mass of sediment descends toward the neck each time from a different point on the inner surface of the bottle.

Contact of the glass with the *pupitres* causes more oscillation. The bottle is placed back into the rack at a slightly steeper angle, ending up at approximately 50–55° from horizontal. Gravity causes the sediment to slide down a fraction of an inch toward the crown.

Each bottle is turned every eight hours (once per day); a skilled hand riddler may turn as many as 25,000 bottles/day. The process takes one to twelve weeks or longer depending upon the nature of the sparkling wine and the skill of the remeur.

The remeur is perhaps slowly becoming an endangered species, because automatic riddling machines are becoming common in both Europe and the U.S. The gyropallete has a pallet basket holding 504 bottles which can shift in all directions—up and down as well as from side to side—and stop abruptly. These machines can be controlled by a computer system capable of operating many units with different riddling cycles.

Korbel Champagne Cellars, in Guerneville, CA, has been quite innovative with remuage. They perfected one auto-riddling system that consists of seven layers of double horizontal racks. The upper rack in each level is stationary, the lower one movable.

Bottles are placed into this system by hand at about a 20° angle from vertical. The bottles are then flip-flopped back and forth about four times/day by moving the lower rack and are vibrated for several minutes. Riddling often is accomplished within seven days (Berti 1980).

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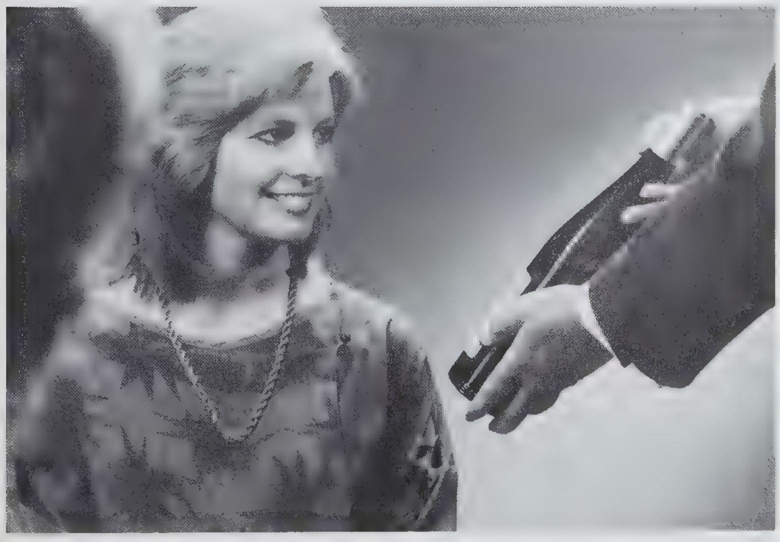
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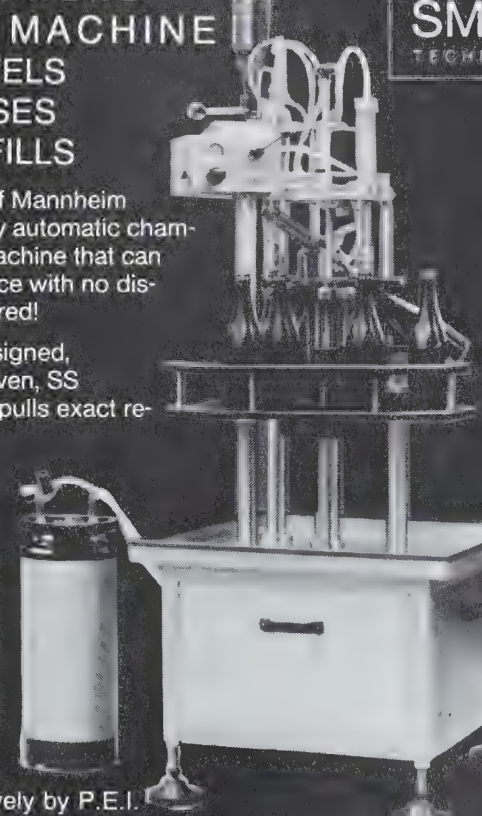
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Korbel's second innovation was a system allowing sparkling wine to be riddled in the same corrugated cases which go to market. Bottles spend 12 to 18 months neck up in the carton. The cartons then are inverted and moved to special pallets that tilt 25° and vibrate briefly to loosen the yeast from the walls of the bottles. The elevated side of the pallet falls abruptly, jolting the bottles. It takes 5 to 7 days to riddle 1,000 cases in this fashion (Stashak 1983).

The Spanish, among others, use a semi-automatic batch system which consists of a metal frame rotated on a pivot. Each 'rocker' holds approximately 500 bottles *sur pointe* in a metal bin. The bin is mounted on an eight-sided fulcrum, which enables the bottles to be revolved ⅛ turn each movement. Many units have an adjustable pivot pole. This facilitates remuage at a smaller vertical angle and allows the angle to be adjusted.

Auto-riddlers have several advantages. A remeur can transfer approximately 500 bottles/hour from ageing bins or stacks to riddling racks. He will turn these 20 times during a three-week period and then remove them for disgorgement. In 56 hours of operation, 6,000 bottles can be completely hand-riddled.

With an auto-riddler such as a gyropalette, the same task can be accomplished in 6.5 hours (Fritz-Stephens 1981). This saves an estimated $.08–$.16/bottle in labor costs.

An auto-riddler bin of 504 bottles requires about 16 square feet of floor space. This is considerably less than is required by A-frames. One cellar of gyropalettes processes as many bottles as seventy cellars could using hand remuage (Duijker 1980). There is a considerable cost difference between auto-riddlers and A-frames; however, auto-riddlers can be leased.

For the small winery, rockers appear to be an interesting and economical alternative. Unfortunately, neither the auto-riddler nor the rocker systems do as good a job as hand riddlers do. This is principally due to the fact that, in bin riddlers, bottles are not subjected to the same jolting action supplied by hand riddling. Even those sparkling wine houses that have heavily invested in auto-riddlers also rely on hand riddling for 'difficult' wines.

A production method recently patented by Moet & Chandon in France may revolutionize the industry's entire concept of riddling. The system uses a calcium alginate immobilizer to entrap the yeast during secondary fermentation. About 300 to 400 immobilized yeast 'beads' are added to each bottle, enabling the bottles to be stored *sur pointe*.

This procedure, which could have a major impact on the cost and efficiency of sparkling wine production, allows the yeast to be removed from the bottle in less than ten seconds. Moet is licensing the technique to other selected méthode champenoise producers. ■

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PINOT NOIR: Color Extraction and Stability

Peter Watson-Graff

Color in wine can be an indicator of intensity and depth of character. It is the goal of winemakers to bottle wines of maximum stable color while maintaining maximum overall quality. We will explore color in wine in general and in technical terms, and then look at some variables as they relate specifically to Pinot noir. We chose Pinot noir for its well-known problems with color intensity.

Color in wine is due to the presence of phenolic compounds with complex multiple-ring structures. (*Fig. 1*) We can eliminate from this discussion the cinnamic acids or single-ring structures. They can oxidize and become bitter-tasting (as in old white wines), but they do not themselves play a large part in color, either red or white.

Flavanols and anthocyanins have similar basic ring-structures and both progressively oxidize to a brown shade with age. Flavanols are colorless and anthocyanins are the red pigments of wine.

In *Vitis vinifera*, all varieties have their pigment anthocyanin attached to one molecule of glucose. These are called monoglucoside pigments. (*Fig.* 2) Some are also attached by a glucose molecule to a cinnamic acid, and are known as acylated pigments. (*Fig.* 3) Acylated or not, these anthocyanins form the red and purple pigments of wine.

Acylated pigments are especially important when discussing Pinot noir, because they are absent. In the 1950's, Dr. Bryce Rankine found two acylated anthocyanins missing from his band chromatograms of pigments extracted from several varieties (*Fig. 3*), including Pinot noir, Tokay, Gamay Beaujolais, and Ribier (all low-color varieties).

Other differences in color are due to the different -R groups attached to the basic double-ring structure. The more groups there are, the darker the color (more light is absorbed). Catechins and leucocyanidins (examples of side-chains) are yellowish to brown and affect the hue and intensity of color, as well as astringency. They are usually found as polymers, increasing in length as a wine ages.

Polymerization of phenols changes color depth and hue. Polymers are colored similarly to monomers, but as they increase in size, they precipitate and no longer contribute to color, thereby lightening it. Polymerization increases with oxidation, high pH, high temperature and age.

Viticultural Factors Affecting Color

Pinking of white wine may be due to oxidation of a colorless precursor to an anthocyanin-like form. (Singleton, et al, *AJEV* 30, 1,79) Some young Pinot noir wines may be frightfully light, but the color increases in the first several months. This may be

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due to a similar precursor oxidation, as well as to the formation of some brownish polymers of the catechin and leucocyanidin fractions.

A wine's pH has a profound effect on color, both directly and indirectly. The hue is decidedly red at low pH, becoming more purplish around 3.5, and grey to blueish-grey to green above 3.5 pH. That anthocyanin change is accompanied by a change in the catechin and leucocyanidin fractions, from colorless to yellow or brown. This direct pH effect combines with the effect of pH on oxidation rate and SO_2 equilibrium.

The effect of SO_2 on color is due to the reversible binding of HSO_3^- (bisulfite ion) to one of the rings, thereby changing the way the molecule reacts to light. (*Fig.* 4) The bleaching effect of HSO_3^- binding affects the monomers and dimers, because it occurs at the same site as polymerization. It can only bind at the end of the polymer chain and has no effect on longer chains.

Color can be quantified in the laboratory by measuring absorbance at various wave-lengths compared to a water blank. Wine is normally measured at 420 nm and 520 nm. The 420 nm measurement is for the yellow or brown hues, while the 520 nm is for the red hue intensity. The sum of these gives a measure of the total color intensity, and the ratio 420 nm/520 nm measures the hue (as a percentage of brown to red pigments).

The measurement of 520 nm in the presence of excess SO_2 gives a measurement of the degree of polymerization, because SO_2 bleaches the monomers and dimers, but not the polymers (as previously mentioned). These measurements are necessary to the scientist or experimenter because the eye cannot quantify color. Wines prompting similar eye response can have differing absorbances.

Climate effects are more obvious. Proper sunlight is necessary for pigment manufacture, but too much sun will cause sunburn and color breakdown in the berries. Cooler climates will retain more color as will cool nights.

On the other hand, warmer climates can produce either riper grapes with more resulting alcohol for extraction of color, or shrivelled grapes with more concentrated color. The combined effects of soil and climate on pH will affect color indirectly as described above. Choice of clone is important since the myriad clones of Pinot noir have different color levels.

Viticultural techniques will affect color also. Both overcropping and excess vigor (with its resultant undercropping) will reduce color production. The proper canopy size and vigor level, of course, varies from vineyard to vineyard, as well as from block to block in the same vineyard.

It will take several seasons to find the combination which best balances economic return and high quality. Proper canopy management techniques in pruning and training can be used along with summer hedging to maintain enough leaves for precursor manufacture, while allowing adequate light penetration and airflow. Some light on the berries is necessary for color production; it has been shown that clusters covered with foil will have less color.

Berry size is also very important to color. Smaller berries with a higher skin-to-juice ratio will give more color and more flavor, but less juice yield/ton. The optimum crop would balance this ideal berry size and color with the need for sufficient economic return. Factors which determine berry size include clone, water stress, irrigation timing, completeness of pollinization (number of seeds), vine nutrition, disease, etc.

Some people theorize that the new heat-treated, virus-free clones of Pinot noir are not of the highest quality. They suggest

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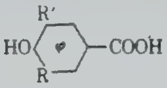
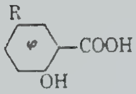
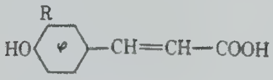
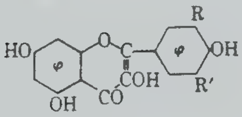
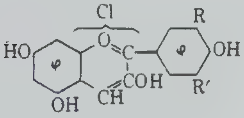
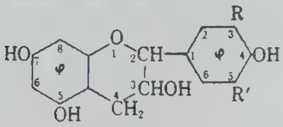
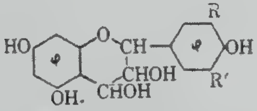
Figure 1 STRUCTURE OF POLYPHENOLIC COMPOUNDS

	Compounds Identified	Amount		Nature of Compounds
		Reds	White	
Benzoic acids 	R=R′=H *p*-hydroxybenzoic acid R=OH, R′=H protocatechuic acid R=OCH_3, R′=H vanillic acid R=R′=OH gallic acid R=R′=OCH_3 syringic acid	50–100	1–5	Esters
	R=H salicylic acid R=OH gentisic acid			
Cinnamic acids 	R=H *p*-coumaric acid R=OH caffeic acid R=OCH_3 ferulic acid	50–100	2–10	Esters with anthocyans and tartaric acid
Flavonols 	R=R′=H kempferol R=OH, R′=H quercetin R=R′=OH myricetin	15	0	2 or 3 glucosides and 1 glucuronoside in musts; 3 aglycones in wines
Anthocyanidins 	R=OH, R′=H cyanidin R=OCH_3, R′=H peonidin R=R′=OH delphinidin R=OCH_3, R′=OH petunidin R=R′=OCH_3 malvidin	20–500	0	Glucosides and acylated glucosides (to *p*-coumaric acid); varies for different species of *Vitis*
Tannins-flavan-3-ols 	R=OH, R′=H catechin R=R′=OH gallocatechin	1500–5000 50–100	0–100 0	X[1]
Tannins-flavan-3,4-diols 	R=OH, R′=H leucocyanidin R=R′=OH leucodelphinidin	Traces	0	

[1] X = Polymers of flavans, principally of 3,4 flavan-diols; as monomers small amounts of the flavans are found in red wine
Source of data: P. Ribéreau-Gayon (1964).

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that the new clones do not give the small crop size, small berries, and low vigor which contribute to higher quality.

On the other hand, leaf-roll virus will reduce color levels due to its petiole-blocking effect. The color precursors are locked up in the leaves, producing the 'beautiful fall foliage' symptom.

Most producers will opt for virus-free clones to ensure good vine health. Among the new clones, there is variation in crop size, berry size, and vigor, so that a selection can be made which best suits the producer's style.

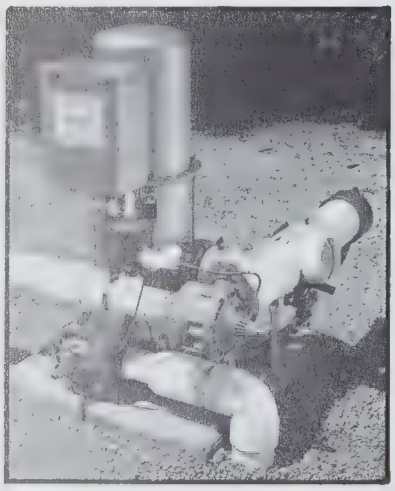
When tracking ripening, consideration should be given to balancing the proper pH for hue and stability with sufficient alcohol potential in order to extract the color present in the skins. A final pH of not over 3.6 seems to be proper for both color and stability.

Final pH can be predicted (theoretically) if the malic, tartaric, and potassium levels are known. Analyzing grape samples for malic by spectrophotometry and for potassium with a K electrode is recommended. With some experience and several years of data, a winemaker can predict post-malolactic pH.

Botrytis and other molds can negatively affect color due to their enzymes, which break down color compounds in the grapes as well as in the must (before they are destroyed by the heat of fermentation and the alcohol produced). Avoiding *botrytis* infection is therefore very important. Extreme mildew infection can also lessen color by impeding ripening.

Winemaking Techniques Affecting Color

In the winemaking process, there are several factors which contribute to wine color. The heat of fermentation and the alco-



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hol produced work together to extract color from the skins by breaking down cell walls and releasing the coloring materials. Sulfurous acid has the same extractive effect.

Most producers try for a peak fermentation temperature around 30°C, with some as low as 20°C. Many avoid any SO_2 additions before malolactic fermentation to improve the bacterial environment and to lessen the extraction of bitter phenols. Maximum color extraction can also be encouraged by elevated temperature (thermo-vinification at 140°F for one to two minutes), although the initial high color from this process seems to be unstable and results ultimately in less color.

Figure 2

MONOGLUCOSIDE PIGMENT

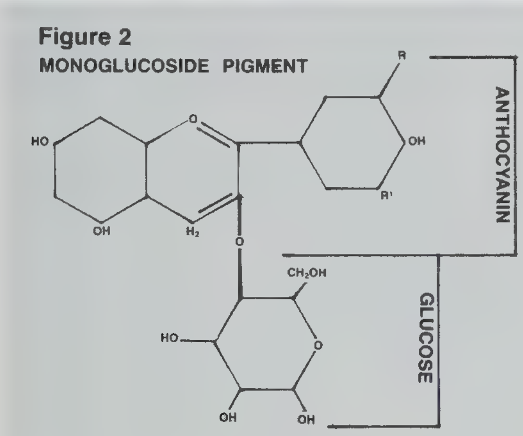


Figure 3

MALVIDIN-3-MONO GLUCOSIDE P-COUMARATE

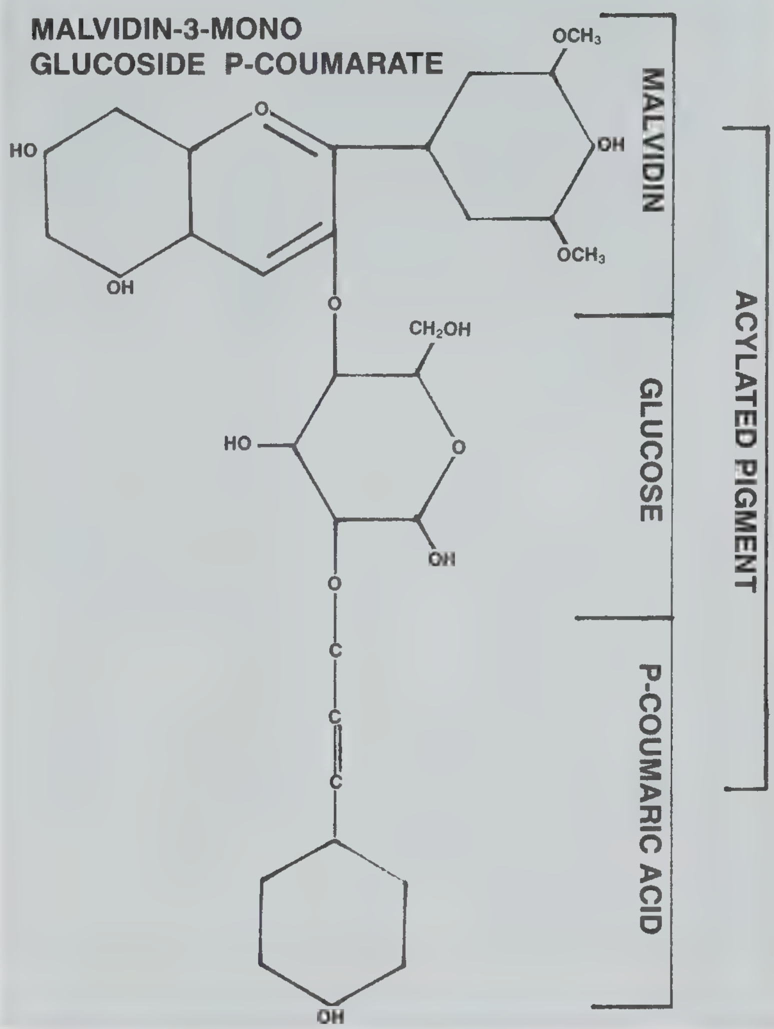
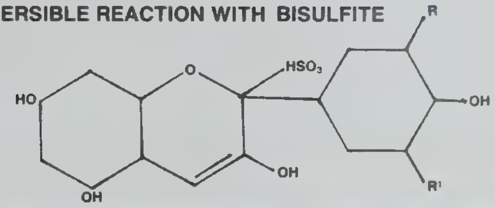


Figure 4

REVERSIBLE REACTION WITH BISULFITE



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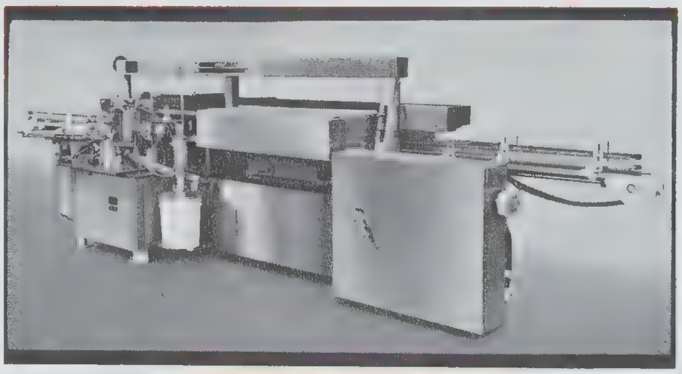

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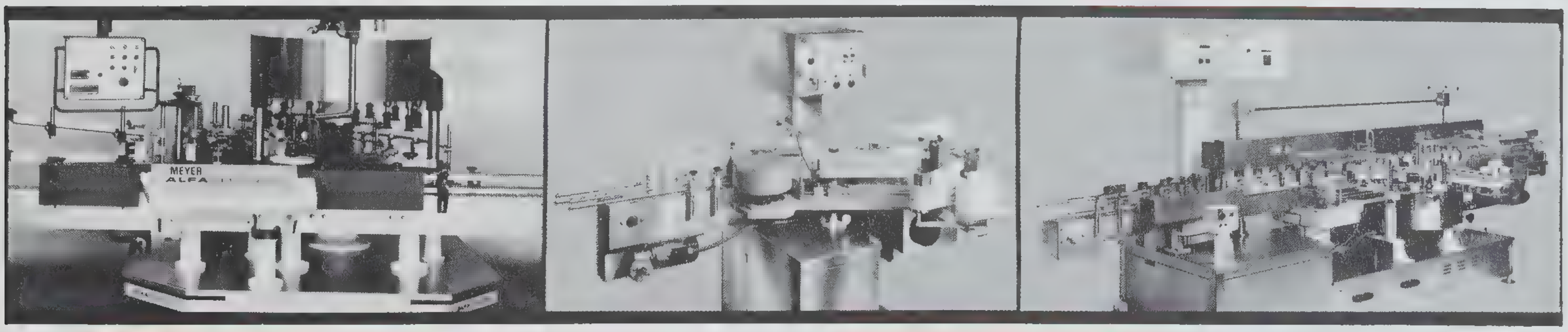

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Proper attention must be paid to the mixing of the skins with the juice during fermentation. Punching down, pumping over, or some combination of the two are the primary methods. The rotary fermenter, allowing for the mechanization of this demanding chore, seems to be a good new idea. Submerged caps are used also, but not very commonly, since producers feel that the mixing effect of punch-down or pump-over gives better results.

If the color absorbance levels are graphed during fermentation, it can be seen that the rate of increase of the red pigments peaks at an earlier stage than that of the yellow or brown pigments. Typically, the red (520nm) levels begin to slow their increase at 5 to 7% alcohol or 10 to 12° Brix, while that of the yellow (420nm) doesn't slow until 3 to 4° Brix and does not slow down as much.

Since there seems to be some stabilizing effect on the anthocyanins from increased tannins, it is better to press when the total phenols are correct for the style, instead of at maximum red color.

For example, Pinot noir pressed between 0° and 5° Brix yields a high degree of color with lower tannins and a lighter, more fruity style. Pressing after fermentation is complete produces lower initial color (perhaps more stable) and more tannins for a heavier style.

Addition of stems to the fermenter is a controversial subject—some producers swear by it and others swear at it! On one hand, stems do absorb color, causing less color intensity, but many winemakers like the higher level of tannins which result. Others decry the stemmy character which can be produced. If stems are to be kept in the fermenter or added back, they should not be torn up during the crushing or stemming process.

It certainly would be impossible to add whole (intact) berries without their stems. Addition of whole clusters and no initial crushing is advocated by some producers. This produces lower color because skins are not crunched up as much, but advocates feel the fruit character is improved.

With this method, fermentation rate is slowed because not all of the juice is released at once and the yeast take longer to build up to their maximum rate. This is an advantage in Pinot noir, which has been known to ferment dry overnight. This technique is not a true 'maceration carbonique', because the cap is punched down to crush the grapes and mix the pomace with the juice two or three times/day.

Given the paramount importance of pH, it is necessary to acidulate the must as early as possible (if needed). A final wine pH of less than 3.6 will give the best red color. Some producers have advocated using malic acid for acidulation—at least in part—if the must is very low in malic. This avoids skewing the malic/tartaric ratio too far towards tartaric, which can cause problems with malolactic fermentation.

Acidulation is best done at the beginning of primary fermentation because the lower pH will cause increased fruitiness, lower volatile acid, and a slower fermentation rate. It seems to require less acid addition to affect the pH when added at the beginning, rather than after, fermentation, although some post-malolactic fine-tuning may be required.

With a high pH/high acid must, more complicated methods must be used: ion exchange, calcium double salt precipitation, etc. (This could be the subject of another story or even a book.) Dr. Roger Boulton has (jokingly?) suggested the use of phosphoric acid to acidulate, because of its three protons/acid molecule, but the BATF and FDA have not approved this for wine.

Some producers add pectolytic enzymes to the fermenter, which seems to aid color extraction as well as increasing yield and speeding clarification of the wine. They must be added at the very beginning of fermentation because the alcohol produced will inactivate the enzymes after fermentation begins.

One method to increase color is to draw off a portion of the free run juice from the fermenter prior to fermentation. This increase of the skin to juice ratio also increases other flavor elements (as well as rewarding you with some *vin gris* to drink in six to ten months!) This is probably the most highly recommended procedure for increasing color and complexity.

Another method of increasing color is to allow a small percentage of grapes to ripen further on the vine to about 27° to 28° Brix, then add them to the main fermenter to extend the fermentation and maceration. The pH will be elevated in this late-harvested lot, but the overall effect on pH and acid is minimal compared to the increase in color.

This technique might be beneficial when the main body of grapes must be harvested early to retain proper acidity and pH. The effect on flavor must be considered, because this method can add an overripe flavor to the resulting blend. Experimentation is called for.

There is a small loss in color after malolactic fermentation. This is due to the dehydrogenation of citric acid by the bacteria, providing hydrogen ions that reduce the anthocyanins to less-colored forms. The omission of malolactic in Pinot noir production is not recommended, however, for it would result in less complex wine character and would absolutely necessitate sterile (0.45μ) filtration at bottling, increased SO_2 levels, and minimal or no wood ageing.

A method widely used by some producers, but shunned by purists, is to blend highly-colored varieties with the low-color Pinot noir. About 25% of a high-color variety such as Pinot St. George or Petite sirah will strongly improve the color without violating appellation laws. Zinfandel can also be used; although less strongly-colored, it is perhaps more closely related in flavors. Flavor is, as always, the final criterion, because the subtle flavors of Pinot noir can be overshadowed by these other varieties.

Changing Consumer Attitudes

At the consumer level, the color of Pinot noir is perceived as a reflection of total depth of character, but consumers are beginning to learn that Pinot noir generally will have less color than other varieties. Burgundians say that if the finger cannot be seen through the glass then the wine is too dark (probably blended with Rhone wine, or worse, Algerian!)

In tastings evaluating some of the methods mentioned here, I have noticed that the more darkly-colored Pinot noirs are often not the best wines, due to harsher tannins and/or lack of fruit. The consumer seems to be accepting Pinot noirs which are light-colored if they find the overall quality pleasing.

As a wine ages, color intensity diminishes due to polymerization and browning caused by oxidation. A young wine's almost blueish-red will change to a bricky red with age. At a tasting of 32 vintages of Romanee-Conti held in Los Angeles, CA in April, 1981, the pre-1950 wines were noted for their orange-amber hues but the 1945 still had ageing potential and the reddish-orange 1925 showed "great youth for its age." This illustrates the fact that color is only one part of overall quality, and can be a minor one at that.

On the whole, most winemakers feel that color is a 'hit or miss' factor which can be quite variable from vineyard to vineyard and from vintage to vintage. They feel that compromises should be made between maximum color and maximum overall quality.

Consumers are becoming more discerning about the subtle qualities of flavor, odor and mouthfeel, and are relying less on color as their measure of quality. Pinot noir remains one of the noble varieties in spite of its low color intensity. In fact, for some Pinot noir afficionados, low color is a benefit, because they appreciate the wine's translucent quality. ■

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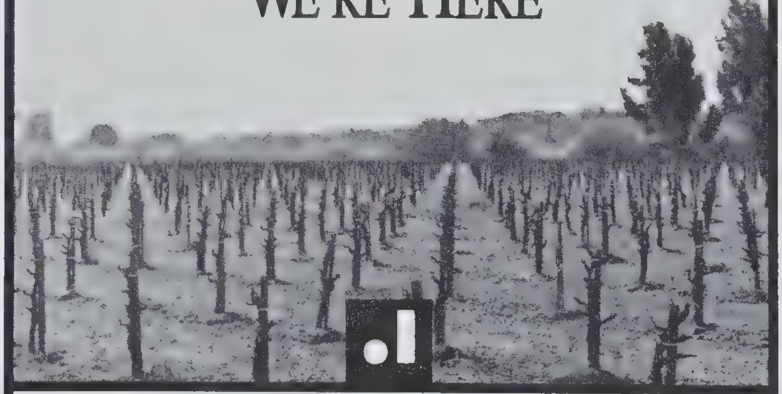
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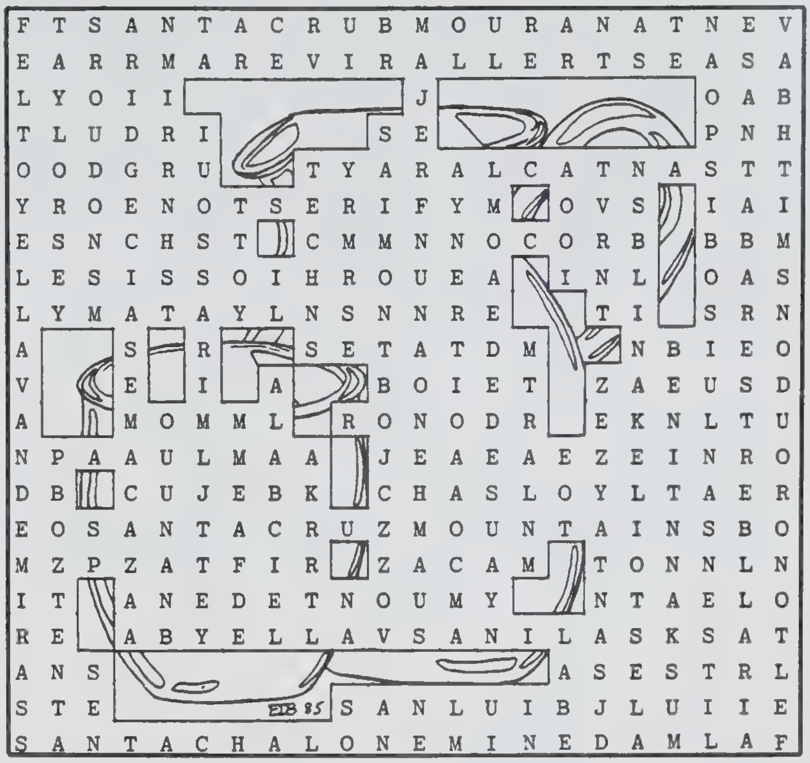
CENTRAL COAST HIDDEN WORDS

The Central Coast is often broken into North Central (Santa Clara to mid-Monterey county) and South Central (Paso Robles down to Santa Barbara.) In our sentences below we've UNDERLINED some locations and wineries. Can you find those same UNDERLINED words in the grid?

1. SANTA CLARA COUNTY: Urbanization's reduced this county's massive grape acreage. Paul Masson has left for Monterey; Almadén and Mirassou remain, but their grapes come mostly from Monterey, Santa Barbara, San Luis Obispo, and San Benito Counties, and from the Central Valley. Out of 33 wineries, we have space to mention: Mount Eden Vineyards, Ridge Vineyards, David Bruce Winery, and San Martin Winery.
2. SANTA CRUZ COUNTY: Some wineries: Ahlgren Vineyards, Felton-Empire, Vine Hill Wines, Roudon-Smith. The phrase "Santa Cruz Mountains" is an appellation, or area designation that you'll see on the labels of some 2 dozen wineries in the foothills of both Santa Clara and Santa Cruz counties.
3. MONTEREY COUNTY: Main grape growing—Salinas Valley (30,000). White grapes grow well in this cool climate. Some wineries: Chalone, Durney Vineyard, Jekel Vineyard, The Monterey Vineyard, Taylor California Cellars, Ventana Vineyards Winery, and Paul Masson's remaining facility.
4. SAN LUIS OBISPO COUNTY: Varied climates and soils grow Zinfandel, White Riesling, and Edna Valley Chardonnay grapes. Some wineries: Corbet Canyon, Edna Valley Vineyard, Estrella River Winery.
5. SANTA BARBARA COUNTY: Cold, especially good for whites. Chief district: San Ynez Valley. Some wineries: Brander, The Gainey Vineyard, The Firestone Vineyard, Sanford & Benedict, Santa Ynez Valley Winery, Zaca Mesa Winery, and J. Carey. Leeward Winery is in Ventura County to the south.



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Our grid is based on the open containers and water pitchers that are a necessary part of every winetasting. If you don't like the wine, or you don't care to drink too much, empty your glass into the container, rinse it with water, and empty it once again. This also prepares the glass for the next wine.

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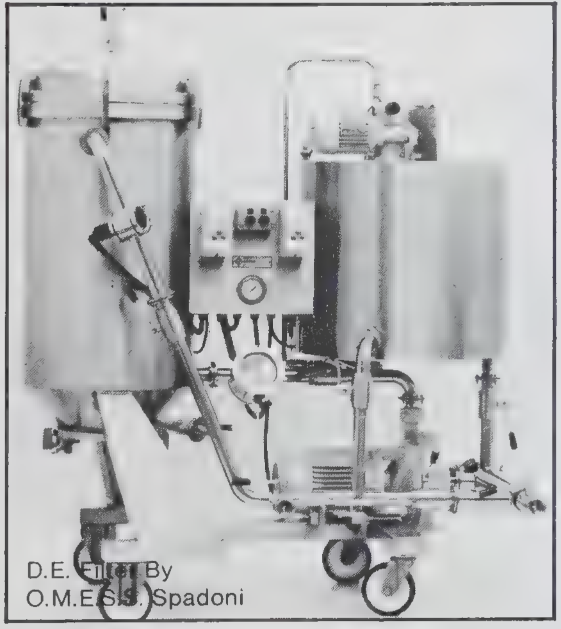

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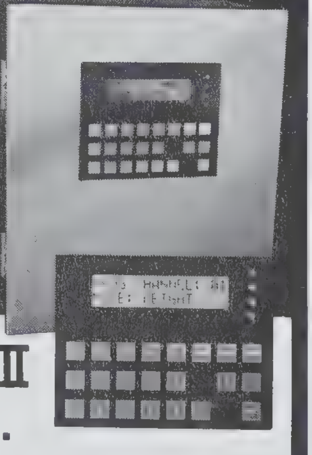
WHAT'S GOING ON?



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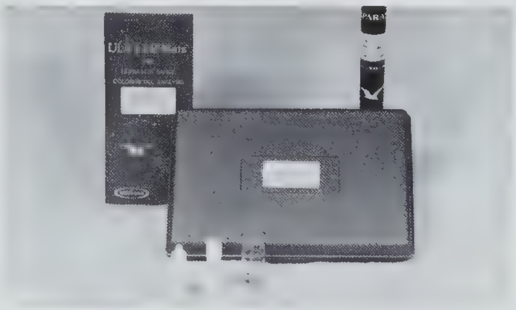
NEW PRODUCTS

Computerized Tank Monitoring

Pacific Micro-Control Corporation, formerly Levy Systems, creates and installs centralized tank monitor systems. The RT842 computer-based system allows precise control of wine tank temperatures as well as monitoring, and adjustment of set points from one central location. Systems can control the temperature of tanks by opening and closing remote solenoid valves which control the flow of coolant and heating fluid to the tank jackets. A Night Time Setback feature is also available which allows a winery to cool at night when electrical rates are lower.

Contact: Dr. John Hench, Pacific Micro-Control Corporation, 3425 S. Bascom Ave., Campbell, CA 95008; 408/371-4466.

Hydrogen Peroxide Detection Test



CHEMetrics, Inc., offers a new test kit for determining hydrogen peroxide in treated waste waters and rinse solutions from aseptic packaging operations. The test has a detection limit of 20 ppb and an overall range of 20 to 200 ppb.

The test is based on the sensitive reagent, DDPD, a derivative of DPD. Hydrogen peroxide reacts with DDPD in the presence of potassium iodide to form a blue reaction. The intensity of the color formed is directly proportional to the hydrogen peroxide concentration in the sample. The results are obtained by visual comparison with standards and takes seven minutes. The results are expressed as mg/L H_20_2. The self-filling ampoules help provide a simple test with unlimited shelf-life.

Contact: Alisa Hudson, CHEMetrics, Inc., Route 28, Calverton, VA 22016; 703/788-9026.

Trellising Structures

Trellising stakes and crossarms, from A & P Ag Structures, Inc., are re-rolled from railroad rail. These high-carbon steel angles have slash-punched holes for easy wire attachment and movement of catch wires. The 1 ½-inch angle crossarms and knee braces can be bolted to Lodgepoles, 2x2's or manufactured to fit heavy angle stakes. The tensile strength of the stakes and crossarms can allow greater spanning distance without buckling to wind or crop load, resulting in a lower material cost per acre.

Contact: A & P Ag Structures, 11266 Avenue 264, Visalia, CA 93277; 209/685-8700 or 4102-B St. Helena Hwy, Calistoga, CA 94515; 707/942-9579.

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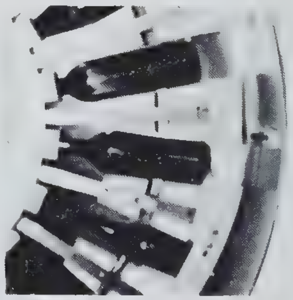
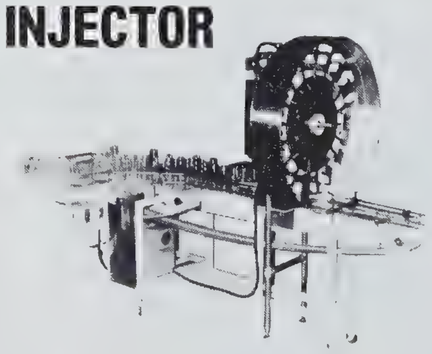
SEE US AT A.S.E.V. BOOTH 824

CLEAN & GAS FLUSH BOTTLES WITH COMBINATION CLEANER/ GAS INJECTOR





HOW IT OPERATES!

In clockwise rotation, bottles are guided so stainless steel rinse tube enters neck of bottle 2" to 3".

Bottles are air rinsed for 2-45° long segments while inverted. From 10:00 to 2:00.

Inert gas is then injected while bottles are still held up in rinse tubes from 2:30 to 4:30.

Bottles drop away from tube and onto the filling line conveyor.

BOTH CLEAN AND FLUSH ALL BOTTLE SIZES TO 4 LITRE

Inert gas is injected into your bottles after they are air cleaned. "Flushed" bottles are then fed directly into the filling machine.

Mounts over your existing conveyor.

Results in time intervals for 750 ml. Wine Bottles

Line Speed	Air Cleaning	Gas Injection
60 bpm	5 sec.	3.3 sec.
90 bpm	3.3 sec.	2.2 sec.

IMPORTANT FEATURES

- Line space of only 25" to 40" depending upon line speed.
- All stainless steel and plastic construction.
- For Wine Bottles, all 75 ml. bottles can usually be handled on the same rotor.

WRITE OR PHONE FOR MORE INFORMATION

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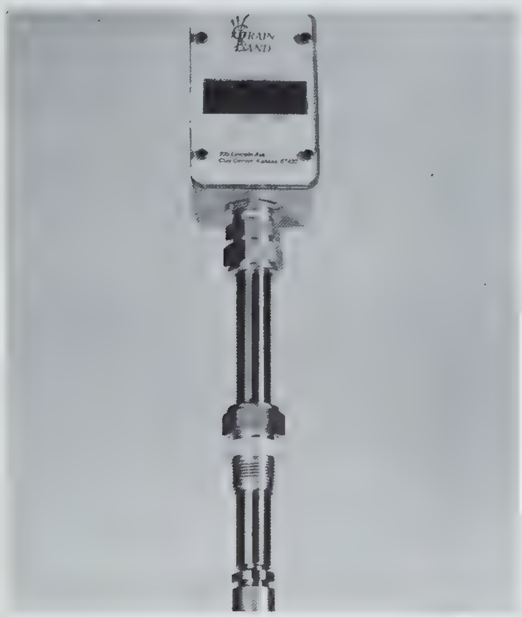
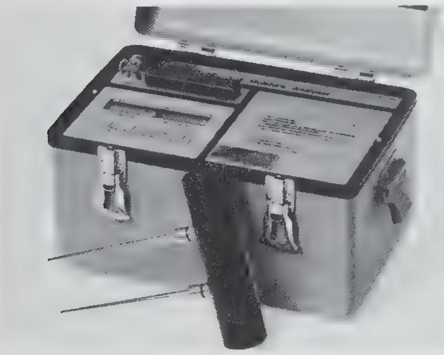
Electronic Flow Meter



The Grainland Flowmeter, priced at $449.00, electronically registers total water use and rate of flow. It can be installed in a one-inch pipe fitting on any line size. The accurate flowmeter has a stainless steel turbine and stem. The shaft is tungstine carbide and the bearings are machined stellite.

Contact: Kyle Bauer, Grainland, Inc., 239 Lincoln Ave., Clay Center, KS 67432 800/247-7698.

Soil Moisture Analyzer



The Irams Soil Moisture Analyzer, available from CPN Corporation, is a portable instrument which can measure on-site moisture content in seconds. It is suited for water management and irrigation scheduling. The dielectric measurement of the water content is independent of the soil type, density, salt content and temperature.

The analyzer is lightweight and requires no special training to use. Twin probes are inserted into the soil, the handle connected to the analyzer and a LCD reading is displayed within five seconds. Probes can be permanently installed at any soil depth for periodic monitoring. All test results can be stored internally for transfer to a printer or data terminal using a RC 232C serial interface.

Contact: CPN Corporation, 2830 Howe Road, Martinez, CA 94553; 415/228-9770.

Electronic Tank Level Sensor

Tank Mate Division of Monitor Manufacturing has introduced an Electronic Level Sensor System which reads and displays tank contents in weight, volume or percentage. The two-part system consists of a sensing element and an electronic control module. A VE electronic liquid level sensor converts liquid pressure to a digital or analog meter reading of volume or weight of material. The sensors have a stainless steel shell and the transducer has an alumina ceramic face with a silicone seal. The MC 55 Control Module allows the user to make final calibration adjustments in place. The sensors can be welded to thin-wall or insulated tanks and have clean-in-place capabilty.

Contact: Donald E. Wolf, Monitor Manufacturing, Tank Mate Division, PO Drawer AAL, Elburn, IL 60119; 312/365-9403. ■

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Choosing

Winona Winkler Wendth

Lead capsules, once required for preserving wines, are now used only to maintain the good looks of a bottle of wine, an important element in sales appeal. Winemakers used to depend upon tin-lined lead caps to help seal their bottles and protect against leakage, contaminants, and cork-chewing rodents.

At that time, capsules were a great improvement over the traditional red sealing wax they replaced. But when bottlers finally developed efficient corks and rodents became less of a threat, capsules became only an aesthetic consideration.

Balance

Tradition still influences choices among capsule sizes and colors, but today there is a nearly infinite variety of choices.

Capsules are an often overlooked component in the seven-part visual presentation of a bottle of wine. Because they were once functional, bottlers often forget that capsules are properly part of the design process, not the bottling process.

Choosing the proper capsule involves visually balancing the color of the wine, the shape and color of its bottle, the size and placement of the neckpiece, and the design, size and placement of the front and back labels.

As with labels, capsules should be as specific as possible to the wines they cap. The most effective ones not only will harmonize with the labels, bottle color, bottle shape, and color of the wine, they also will have some design element that identifies the winery they represent.

Can you distinguish PVC (top) from tin-lead (bottom) capsules provided by Lafitte Cork & Capsule?

Before you determine that element, you must decide on the length and overall color of the capsule. Capsules for 750mL bottles generally are between 50 and 65mm long. In most cases, the standard stock length is 50mm, although suppliers can provide different lengths without requiring the time and cost of a special order. This gives a designer a 25% variance—a little over ¼-inch—to work with, a more significant factor than it seems.

Length

Obviously, the capsule should be longer than the cork. Very rarely do we see a cork dip lower than its capsule, but some bottlings allow that. Although short capsules suggest the old wax caps and supposedly look 'authentic' or traditional, the bottles look undressed.

Capsule length should also balance the bottle shape and label. Overlooking this is a mistake often seen in the US. Burgundy bottles with short labels placed low on the bottle frequently have capsules that are too short. This can make the bottles seem bottom-heavy and their necks unattractively narrow or long.

If you are already committed to short capsules but can redesign your labels, the best correction is to lengthen the label as much as possible, making sure that the color of the capsule is repeated strongly on the label.

There is no general rule for the relationship between capsule length and bottle shape. The flared necks of Burgundy, Rhine, and Moselle bottles require capsules wider at the bottom and emphasize their color or design.

The cylindrical shape of both the necks and bodies of Bordeaux bottles accomodates longer, thinner labels and shorter capsules. But in the end, length becomes a function of design because the repeated use of a color, especially one contrasting with the color of the bottle, can visually pull the capsule closer to the label regardless of its length or the size of the label.

In most cases, capsules work best when they pull the viewer's eye up from the label by repeating some design element—color, available in several colors can accomplish this, too. Many suppliers have a dozen or so on hand at any time.

Color

Too many choices can complicate design decisions. This is particularly true when labels are very colorful or when they change according to varietal. In the first case, the dominance of one color might be limiting from a marketing standpoint: typography or pattern. This common element then pulls the eye back to the label, unifying the total design. Obviously, this goal is most easily achieved with specially designed pieces with custom-matched colors, but simple stock capsules that are the total design might look too feminine or seasonal.

Examples of this are some California wildflower labels. The capsules, often chosen for labels that change for each varietal, are usually well-integrated with the overall design of the bottle but often repeat pastel floral colors that emphasize a feminine, warm-weather feeling—probably not one to attract a New Yorker in November. The bottles also look out of place on tables anywhere during the cold weather or holiday season. Choosing darker capsules repeating less dominant colors might be a better marketing decision.

Some wines are marketed as 'picnic wines', 'warm-weather wines' or 'label collectors' wines', in which case lighter, summery label and capsule colors work well. Others are sold directly to the consumer, rarely sit on retail shelves and are not designed to attract a new buyer's attention. Many producers tend to overlook the marketing impact of their wine packaging. Sometimes, capsule color can moderate these limitations.

Capsule color also must work with the color of the bottle and the wine itself. Capsules that look fine sitting on an olive green bottle of Chardonnay might not look so good on a forest green bottle of Cabernet Sauvignon or a flint bottle of blanc de noir. Amber hock bottles, which can present a problem with capsule length, present a problem with color, too.

Another example of what can go wrong is what happens to some blanc de noir bottled in clear glass. The salmon color of the wine is very difficult to work with and requires careful color integration of the label and capsule. One winery's blush wine sits behind a yellowish-tan label with brown lettering; the capsule is burgundy. The wine tastes very nice, but from an aesthetic point of view, it should be decanted. What might nearly work for a Cabernet Sauvignon in a green bottle can be a disaster for a blush wine.

Mirassou's 'Pastel' solves this problem nicely by repeating the

Photos by Fred Lyon

the Right Capsule

color of the wine in a delicate watercolor on the label, which also has a bold burgundy stripe across its top. A burgundy capsule matching the stripe pulls the eye to the top of the bottle and unifys the design.

Each facet of design, including the color of wine and glass, dictates others. An attractive, although expensive, example of what a designer can do with such modifications is Ralph Colonna's series of labels and capsules for Clos du Bois. Capsules are custom-colored and different for each varietal, harmonizing as closely with the color of the wine as with the labels.

The *least* expensive way to solve the problem of integrating capsules with labels and bottles is to find a single color that works well with all design variables.

In general, traditional red, burgundy, or gold work best with a wide variety of bottlings, partly because these colors are so often found on wine labels. Red and burgundy also evoke the traditional wax cap; gold is always a good marketing choice for more expensive food and beverage products.

John Farrell of Colonna, Farrel: Design Associates, says that although he has designed many successful blue labels and capsules, the color is often problematic because consumers do not usually associate it with food or drink. Silver (lacquered tin) is inexpensive and can be very elegant—assuming, of course, that it works with the label.

Unless the label uses white as an effective design element, rather than as an empty background, white capsules (especially those without decoration) often don't work well on premium wines because they suggest plastic caps. Black can be elegant but can easily outclass the product; it is often associated with brandy and liqueurs, rather than with wine.

There are successful exceptions to all these generalizations—it's best to ask a professional when they should be followed and when they shouldn't. If you have 15,000 purple capsules on hand, good designers will work with them, although they may prefer not to.

Wesley Poole of Poole Art and Design Associates and John Farrell believe that working from the capsule is so limiting that neither the designer nor the winemaker usually are satisfied. In the majority of cases, the capsules on hand are replaced as better design alternatives emerge.

Design

Ideally, a capsule will be particular to the wine it decorates. From a marketing, as well as from a design standpoint, capsules with a winery's logo embossed and/or silkscreened on top, with a design element on the side, look better and attract more attention. They identify the wine quickly in an ice bucket or cellar when the label is not visible. The easier it is for a consumer to identify a wine from as many viewpoints as possible, the better it is for the winery.

But specifically designed pieces have problems, too. If your equipment is not working just right, a light-colored capsule or a color in high contrast with the bottle and wine will easily show uneveness in application and look sloppy. This is true for one of the simplest design elements in capsules: single or double stripes along the bottom. An easy way to match the capsule with its label, these stripes, attractive on the un-fitted capsule, can look terrible when they are crooked.

Even worse are right-angle designs on the sides of capsules; hardly any of them apply correctly and they often look askew. Circular logos suffer in the same way when they are distorted by machinery, especially when they are pushed over flared necks. Lettering on capsules almost always works best when it is printed on a slant or otherwise twisted around the piece.

Choosing an appropriate capsule is not really so tricky as it sounds. The points to remember are that the choice must be made in light of many other design elements and that there is no single, simple answer. Because of this, specially designed capsules are a good investment, even though they must be ordered in lots of 20,000 to 25,000 and may take up to four months to produce and deliver.

If the capsules are properly designed, they can work for the winery for a very long time. They no longer protect the taste of your wine, but they can complement its image, make it look good, and help it to sell well.

Cebal Inc.

Cebal is a French manufacturer of tin/lead, PVC and polylam capsules for still and sparkling wines. Custom decorated capsules are available in a wide range of sizes and colors.

These may be decorated by silkscreen printing (up to three colors), offset printing (as many as four colors), and letterpress (up to five colors). Embossing is available on both tin/lead and polylam capsules. Polylam champagne capsules can also have hot-stamped decorations. Cebal also supplies champagne capsules in tin/lead.

In 1987, Cebal's tin/lead capsule factory started a new production line capable of producing 200 capsules/minute. In a single operation, this line forms foils, decorates and packs them into boxes. The factory has an annual output exceeding 650 million capsules.

Cebal will make samples of custom capsules at no cost. Nearly any style and color desired, in sizes to fit almost any bottle, can be produced. One of the most recent creations is a 'marbleized' effect.

Stock capsules are available from the Hayward, CA warehouse in the following colors: white, beige, silver, brilliant gold, bronze gold, black, flor green, glossy green, yellow, glossy red, flor red, bordeaux red, copper, and mustard in the 28.5 x 50mm size. Gold bronze stock capsules are also available in 30.5 x 50mm. Samples are available at no charge.

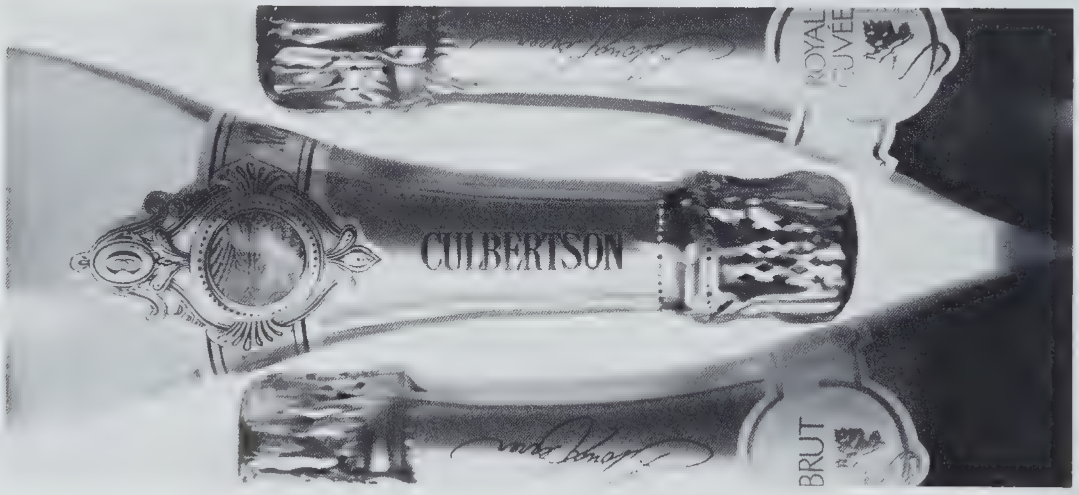
Inquiries to: Cebal Inc., 23759 Foley St., Hayward, CA 94545; phone 415/786-3400; fax 415/786-9505.

Please see our ad page 73

Cork and Seal of California, Inc.

Custom-made polylaminated or tin/lead champagne capsules are available to match any color and fit any bottle shape.

Polylaminated champagne capsules are custom made at CSC. Both the skirt and the top disc of the capsule can be printed in one, two, or three colors by the rotogravure process. Four finishes are available: smooth, pebbled or embossed with a large or small diamond pattern.



A new hot stamping process is available on both polylaminated and tin/lead capsules in our French factory, Europeenne de Surbouchage. Tin/lead capsules can also be decorated by silkscreen and embossing.

Inquiries to: Cork and Seal of California, 5415 Napa Vallejo Highway, Vallejo, CA 94589; phone 707/257-6481; telex 176924.

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L & L fabricators

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Demptos Glass Company

Oversize tin/lead capsules are available from Demptos Glass Company. Capsules have a diameter of up to 51mm and skirt length of up to 95mm. The top can be embossed in the base or a contrasting color. Tear strips or separation rings or notches can be ordered. Capsules will be decorated in any color specified by the customer.

Stock oversize capsules for bottles up to six litres in the following colors can be ordered: florentine red, burgundy red, gold, silver, and white. Lead time for ordering custom decorated oversize capsules to match 750mL capsules is 10 to 12 weeks.

Inquiries to: Demptos Glass Company, 840D Latour Ct., Napa, CA 94558; phone 707/252-7688; telex 317789; fax 707/252-3437.

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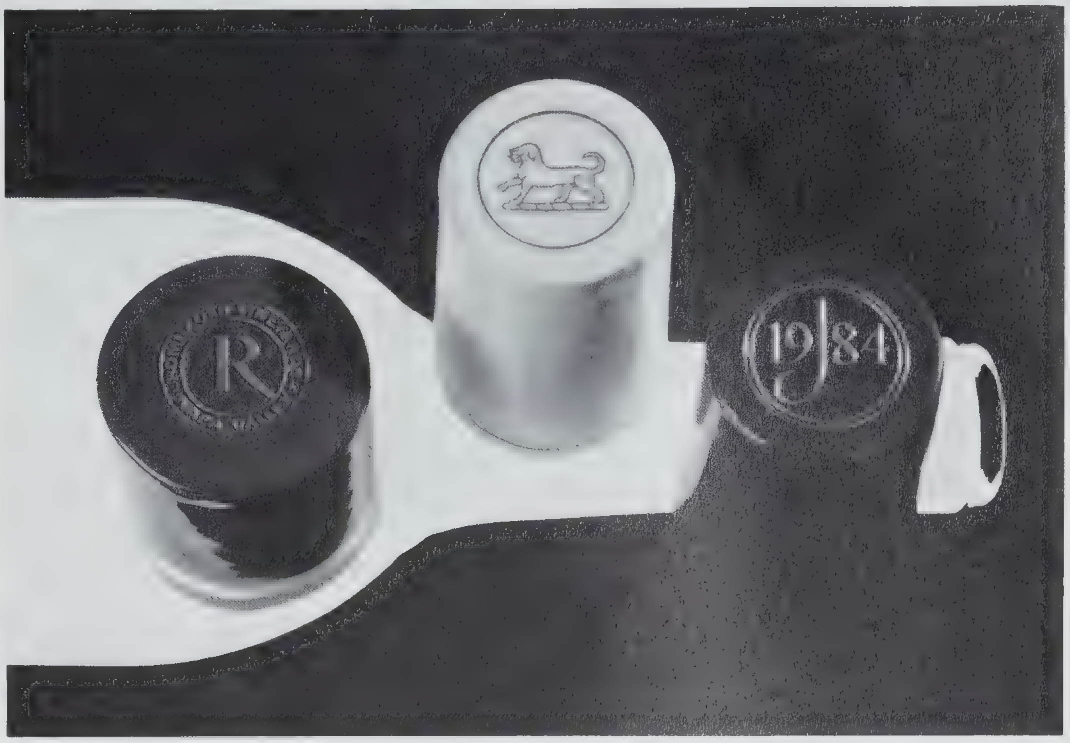

Enotech Corporation

Tin/lead, aluminum, and PVC heat-shrink wine capsules are available. Custom designed and color-matched tin/lead casules require approximately 12 weeks delivery time, with a minimum order of 50,000. Production samples are submitted prior to shipment for final approval of color match and design. Various types of separation rings to suit all automatic capsule dispenser/applicators are available.

Available for immediate shipment from stock are one-color tin/lead capsules 28.75 x 50mm in the following colors: white, cream, yellow, blue, dark red, light red, cranberry, forest green, green fluor, gold bronze, metallic gold, silver, and metallic copper. Minimum order for stock capsules is one carton of 1,750 capsules.

Inquiries to: Enotech Corporation, PO Box 576, Palo Alto, CA 94302; phone 415/851-2040; telex 229377.

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LABORATORIES

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KLR Machines, Inc.

Custom decorated PVC heat-shrink capsules from Sanoplast in Switzerland are available. In addition to flexibility in color and printing, PVC capsules offer a low-cost alternative to tin/lead capsules. Not only are per unit costs for PVC a fraction of tin/lead costs, heat-shrink tunnels require only a fraction of the capital investment required for foil spinners.

A further advantage is that lightweight PVC capsules are flexible and therefore less susceptible to being misshaped and destroyed during manual capsule application. All modern capsule dispensers can dispense PVC heat-shrink capsules at least as easily as tin/lead.

Sanoplast capsules are first printed as flat stock and then rolled into shape. This allows a range of reflectivity, from dull matte to highly reflective metallic, which most closely resembles traditional tin/lead. Flat stock printing has the further advantage over extruded (tubular) PVC capsules in that the capsule is not creased or wrinkled during printing.

The exact closure, bottle mouth and neck configuration must be specified to insure a precise fit, otherwise wrinkling will occur. Additionally, a heat-shrink tunnel with very high temperature/short time heating is required to prevent wrinkling, disc separation, tear-tab protrusion, etc. (KLR offers a Sanoplast heat-shrink tunnel.)

For these reasons, KLR accepts no orders without on-site evaluation of each winery's specific requirements, and shrinking trials in our laboratories in the U.S. and Switzerland.

Inquiries to: KLR Machines, Inc., 1925-B Francisco Blvd. East, San Rafael, CA 94901; phone 415/456-4774; telex 380-753; 47 W.Steuben St., Bath, NY 14810; phone 607/776-4193; telex 510-252-1250.

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Lafitte Cork & Capsule

Tin/lead capsules are produced by Lafitte's sister company, Bouchage Metallique, in St. Gaultier, France. Manufacture begins with lead ingots which are smelted into a liquid and then extruded through a continuous press to achieve a uniform thickness. Tin is then bonded to each side of the lead coil.

Capsules are produced by 'punching' or 'drawing' from circular pieces of tin/lead material. Each capsule is elongated on mandrils until the desired length is achieved. The formed shells are transferred pneumatically to the printing station.

Only the silk screen process is employed for side printing. A maximum of four colors are possible on the skirt of the capsule. After application of side-printing, the capsules are transferred pneumatically to the top embossing station where the top design is embossed. Multiple colors can be added to the top embossing during the operation.

Formation of the separation ring on the capsule skirt is achieved by means of an expanding 'O' ring which engages as pressure forms the top embossing design. Capsules are packed into export

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cartons in individual trays with corrugated protection strips between each stick of capsules. All capsule packaging is prepared for automatic dispensing and will stand up to UPS shipment of small orders to winery clients.

Any size taper is available on orders for decorated capsules. A variety of colors (gold bronze, brilliant gold, white, burgundy, green, matte cream, dark flor red, light flor red, matte black, matte grey, uncolored silver (lacquered), yellow, and metallic pink) are maintained in Lafitte's Hayward, CA warehouse for immediate shipment. All stock colors are in the 750ml and 1.5L size compatible with standard California finish bottles. Minimum order is one carton of 1,800 capsules.

Minimum order quantities on custom-decorated capsules are 20,000 pieces. Lead time for delivery is approximately three months from order date.

Lafitte offers the option of producing either separating rings or two top dents. Either separation feature is compatible with automatic dispensing machines or hand application.

PVC capsules are produced in Lafitte's Hayward, CA, facility using Congex machinery. The printed material is recieved from Coliege Metalco in France in large rolls and formed into capsules of any required length. The same material can be used for 750ml and or 1.5L capsules.

Lafitte maintains an inventory of a variety of stock colors for immediate fabrication on short order. Aluminum top discs are applied in a color matching the body color of the capsule or the top discs can be supplied with a custom decoration. Rotogravure printing is used on the skirts and tops of PVC capsules.

Inquiries to: Lafitte Cork & Capsule, 23476 Kidder St., Hayward, CA 94545; phone 415/785-1786.

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Ramondin USA, Inc.

Ramondin USA, Inc. is the direct marketing and sales arm of the factory based in Spain. Ramondin specializes in tin/lead capsules for wine bottles and polylaminated capsules for sparkling wine bottles.

Stock tin/lead capsules are available from the Napa, CA warehouse in two sizes: 28.75 x 50mm in 23 different colors (including shades of gold, red and blue) and 31.00 x 60mm in 11 colors. An embossed grape cluster with one vent hole on top and separations rings at the bottom are all standard.

Custom capsules can be manufactured in sizes ranging from 28 to 31mm in the top diameter and from 40 to 65mm in length. Any color can be matched, whether it be from a sample submitted to the factory or a specified Pantone color chip.

Decoration can include up to two colors on the top and three colors on the side of the capsules and the top can be embossed or plain. Minimum quantities apply on custom orders and the lead time is approximately three months from date of order.

Both stock and custom capsules are packed in boxes of 1,600 units and in pallets of 35 boxes (56,000 units).

Inquiries to: Ramondin USA, Inc., PO Box 2266, 3266 Villa Lane, Napa, CA 94558; phone 707/944-2277; telex 296117 RAMD UR; fax 707/257-1408.

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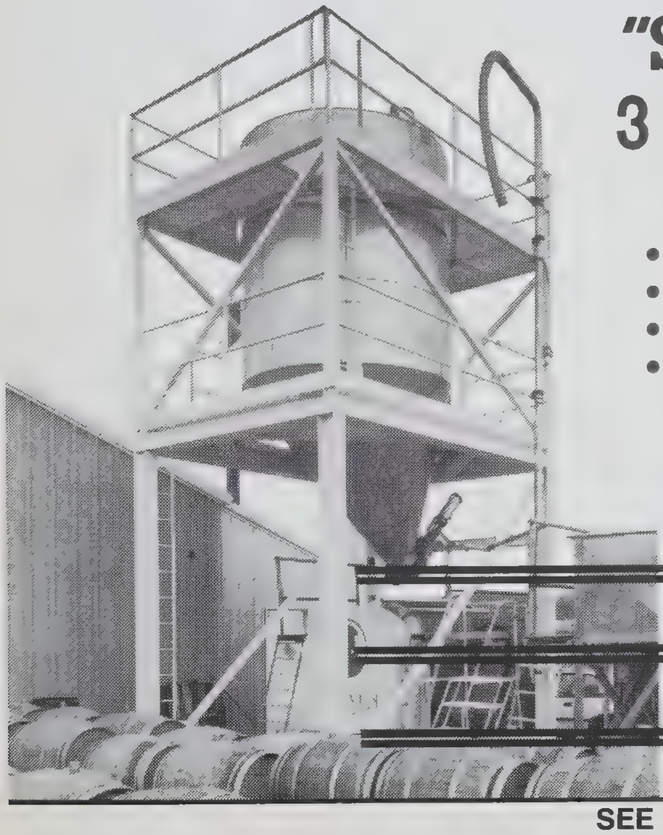

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RLS Equipment Co., Inc.

Tin/lead capsules are available from stock in sizes from 28.75mm to 31mm. Stock colors are: burgundy, silver, black, green, gold, red flor, green flor, as well as a green, white and cream with gold bands or a gold with a black band. All stock capsules have a grape stamp embossed on the top with vent holes. Capsules are loosely packed onto cardboard trays and boxed in quantities of 2,500.

Orders for custom decorated tin/lead capsules will require approximately four to six weeks for delivery after approval of a sample, with minimum orders of 20,000. Custom tin/lead capsules can be purchased in multiple colors in any length or width with a logo embossed on top. Printed capsules are available in both brilliant or matte finishes.

PVC heat-shrink capsules are available from stock in brilliant or matte finishes for the 750mL bottle in the following colors: burgundy, gold, green, black and silver.

Custom orders for PVC capsules will require between eight and ten weeks for delivery after approval of sample, with minimum orders of 150,000.

Inquiries to: RLS Equipment Co., Inc., PO Box 282, Egg Harbor City, NJ 08215; phone 1-800/527-0197, 609/965-0074; telex 4948053 RLSCO.

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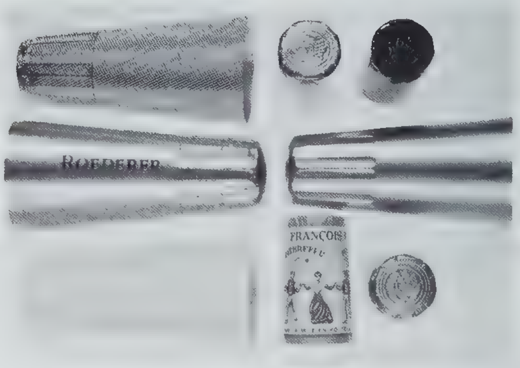
Savoye Packaging Corp.

Savoye is a joint venture company of American National Can and ASA in France providing wine capsules for the United States and Canada.

Sparkling wine capsules are available in all aluminum or aluminum / poly / aluminum (APA, also known as polylaminate). The polyethylene in the middle provides the quality feel of tin/lead but at a lower cost and adds 'body' to the capsule which spins down better at the winery.

A single or double perforation line and/or a printed tear tab for easy opening of the capsule can be ordered. Vent holes ('grillage') can be nine-hole punched or printed. Capsules can be embossed to provide a pebble or diamond-shaped pattern. Raised lettering on the main part of the capsule for an engraved look can be ordered. The top disc can be printed and/or embossed. Capsules can be decorated with up to six-color printing.



In addition, Savoye can provide still wine capsules in aluminum, APA, PVC (plastic) and tin/lead.

Inquiries to: Savoye Packaging Corp., 6590 Central Ave., Newark, CA 94560; phone 415/797-3710; telex 910/381-6052.

Scott Laboratories, Inc.

Three types of PVC heat-shrink closures manufactured by AF Seal, Inc. are available: a cut-band which is used over a bar-top cork or screw cap; an open top pre-formed capsule for bar-tops of all shapes as well as screw caps and ROPP; and closed capsules for all applications with tops made of aluminum, paper or plastic.

Stocks of PVC capsules in maroon, green and gold are maintained in the U.S. in two sizes to fit standard 750mL and standard 1.5L bottles. Customers are requested to always confirm their bottle manufacturer and mold before ordering stock capsules. Custom orders of PVC are accepted in a minimum of 100,000 units.

Tin/lead capsules are available in stock colors of: black, blue, creme, dark green, light matte green, yellow, white, maroon, metallic flor red, gold and silver.

Custom decorated tin/lead capsules are normally available in quantities beginning at a minimum of 25,000. Orders require 12 weeks to process and ship. Depending on pre-booked orders, production could require an extra 10 to 12 weeks. Delivery will be confirmed at time of order.

Custom embossing and/or printing can be done on top of the capsule. The exact bottle neck size and shape must be

specified when placing an order. In addition, bottling line speed, if automatic dispensing is employed and type of spinner used are important factors

Capsules may be manufactured by either the 'multiple draw' or by the 'spin draw' process. Capsules made by 'multiple draw' have a smoother exterior and may be preferred if a certain appearance is desired. 'Spin draw' creates a slightly stronger capsule which is less likely to flatten during shipment.

when determining capsule taper.

Capsules are supplied, as standard, with a ring separation. This assures easy application of capsules to bottles. In addition, for a small supplementary charge, the capsules may be packed within single column trays in their boxes. This assures arrival in 'mint' condition. This is primarily important if an automatic mechanical dispenser is being used.

Champagne capsules are available in aluminum and polylaminated aluminum in both one or two piece construction depending on customer need. These capsules are most commonly applied with a special crimping boot or pleater and crimping boots in combination. Champagne capsules are also available in PVC and tin/lead. All champagne capsule orders are custom.

Inquiries to: Scott Laboratories, Inc., 2220 Pineview Way, PO Box 750249, Petaluma, CA 94975-0249; phone 707/765-6666; Telex 171494; Telefax 707/765-6674; 950 Brock Road South, Pickering, Ontario, Canada L1W2A1; phone, 416/839-9463; telex, 06-981445 Scottlab PICK.

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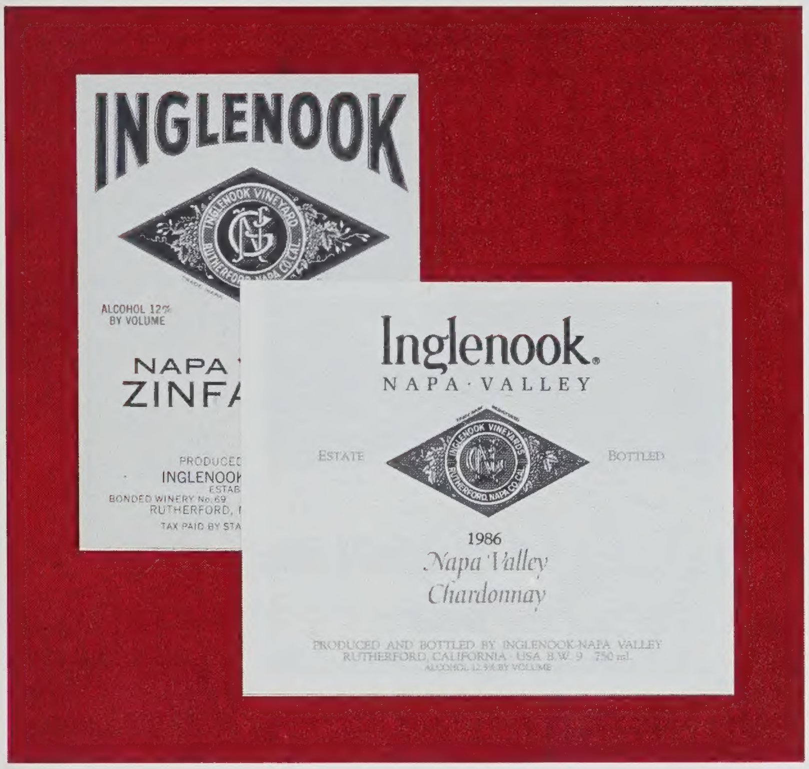
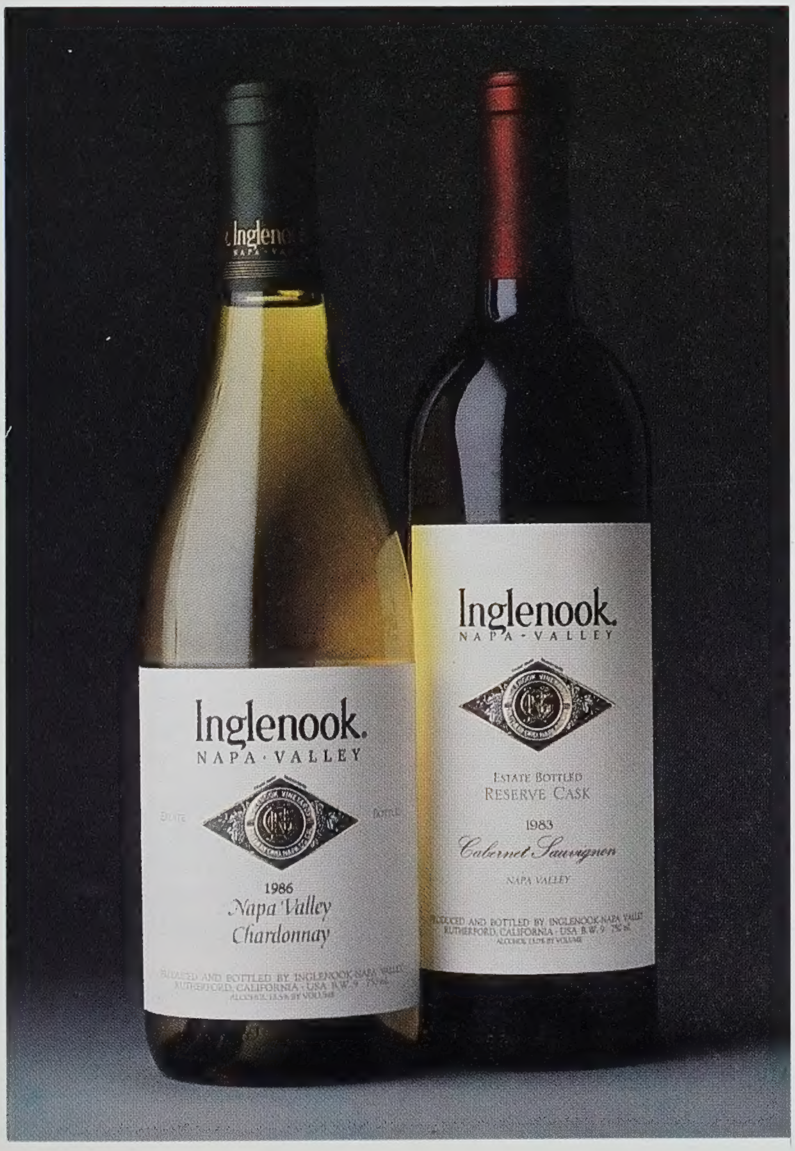
PART II

WINE LABELS:
Standards and Competitions





Winona Winkler Wendth

What effect does winning a design or label award have on a winery's public relations, marketing strategies and sales? Is entering such a competition worth the energy and entry fee?

The value of winning an award varies according to the organizations holding the competition and according to the size and type of wineries entering their labels.

Associations holding these competitions fall into three categories:

1. ***Groups of Designers***

Predictably, their primary interest is design, so they judge a piece on the basis of its overall graphic appeal. The *Communication Arts* annual design awards are one example. In 1987, they recognized three wine labels in their package design section—an unusual occurrence.

All three labels are striking and represent the best of graphic design, but few people besides designers are likely to be aware of these awards. Certainly, they will not attract the attention of the average retailer or wine writer.

2. ***Package Designers***

Associations such as the Package Design Council (PDC) are more sensitive to marketing issues than are general design groups. For example, the PDC recently gave Zaca Mesa Winery (Santa Ynez, CA) a first place award for labels developed for the winery's entire product line, citing the labels' strong shelf and table presence. This illustrates the Council's awareness of the potential marketing value of well-designed labels.

PDC categories are also more narrow—wine label entries are included in their 'Wine, Beer and Alcoholic Beverages' section. Announcements of PDC awards come out in periodicals such as *Ad Age* and *Packaging Digest*, publications more likely to fall into the hands of marketing and public relations people. Of course, such people are not necessarily connected to the wine industry, nor are they necessarily members of a winery's target market segment.

3. ***Wine Industry Associations***

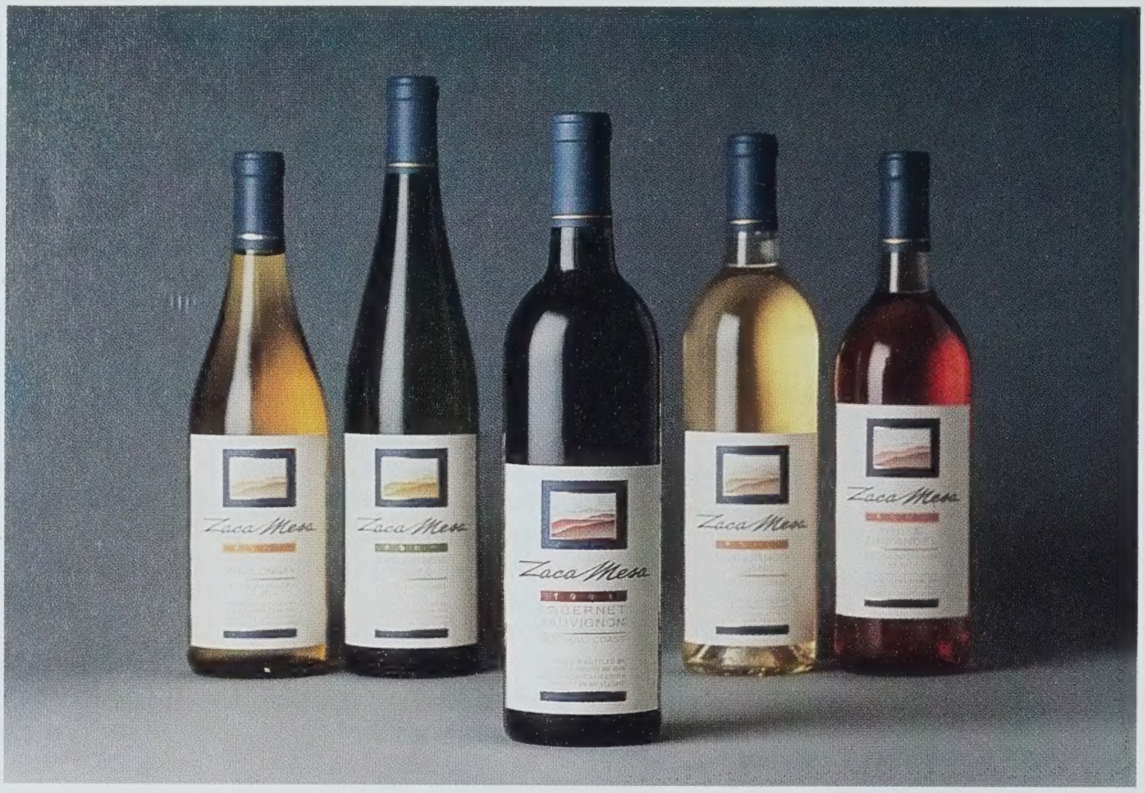
These groups value good design and its ability to sell wine. They also evaluate how appropriate a label is for the type, style, and price of wine it represents. The El Dorado West Coast Wine Label Competition and the recently-established California State Fair Wine Label Competition are only two of many events of this kind. Judges for such competitions are closely connected to the wine industry, and their opinions attract the attention of wine marketers and writers.

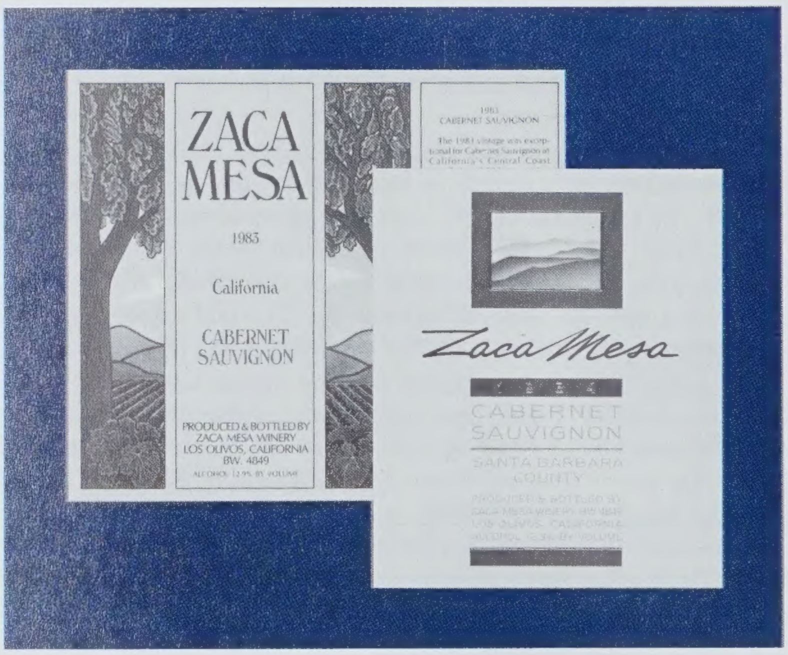
If a winery's management has reason to believe that members of its target market are likely to read about and be impressed by awards given by *Communication Arts*, creative public relations could make a lot of it. But this would not attract the attention of wine writers and retailers like the California State Fair Wine Label Competition does. Such attention is the primary benefit of winning design awards, especially for smaller wineries still building a market base.

New Look for Inglenook Labels

New labels for Inglenook – Napa Valley (Oakville, CA) are clean and elegant, striking a balance between the contemporary and traditional in Ralph Colonna's treatment of the winery's 100-year-old diamond-shaped insignia.

The insignia on the Chardonnay label that took 'Best of Show' at the 1987 California State Fair is reproduced in green, gold





and black ink and is detailed with grape clusters on either side of winery founder Gustave Niebaum's embossed Victorian monogram.

The insignia on the taller Cabernet Sauvignon label is printed in burgundy, gold and black. It features different lettering and descriptive information below, instead of on either side of, the Niebaum insignia. In both cases, the insignias float on fields of subtle tan rulings, which are echoed in black in the diamond shape itself.

Returning to the winery's original trademark, which was abandoned at Prohibition, was "a critical part of marketing," according to Bill Wren, manager of publicity and promotion at Inglenook. The winery wanted to draw on its long, rich history in winemaking, while avoiding the cumbersome, dated look of a facsimile label.

The 'Best of Show' and 'Award of Excellence' citations given by the California State Fair to Inglenook's Estate Bottled Chardonnay and Reserve Cask Cabernet Sauvignon labels have generated some good publicity, but it is difficult for Wren determine the direct benefit to marketing and sales.

Wren is mainly interested in the effects the labels themselves will have on sales. In a sense, the awards given the new design merely confirmed that Inglenook had created a terrific re-edition of a label that fits perfectly into the winery's overall marketing strategy.

New Look for Zaca Mesa Labels

Zaca Mesa has a different story. Mike Leatherman, vice-president for marketing and sales, reports very good public relations coverage for his winery as a result of its PDC award. Leatherman produced press releases on the award, bringing Zaca Mesa's name to the attention of the local press.

Colonna, Farrell: Design Associates, who produced the labels, also sent out press releases, which were read by potential consumers in other fields. Further, having announced their awards, PDC is now publishing a photographic collection of award-winning packaging, and also is sponsoring exhibitions around the country.

Zaca Mesa's colorful labels reflect the winery's decision to upgrade their entire product line. They feature an abstract California mountain landscape taken from Zaca Mesa's immediate geography and placed in a contemporary window-frame format. Traditional and 'upscale' elements are combined with colors that are modified slightly for each variety. Thus, each varietal label, in addition to being readily identifiable, is both distinctive and graphically consistent with the others.

Zaca Mesa retained its identifying script on their more readable, 'powerful' label, but added clear, contemporary, columnar lettering for a distinctive, uncluttered look.

How much of Zaca Mesa's recent increase in sales is due to the PDC award is unknown, but Leatherman believes that the new design has been selling the first bottle of Zaca Mesa wine to many consumers.

Labels designed by Colonna's studio won 1/5 of the awards given by the California State Fair in July, 1987, but Colonna is reluctant to specify an award-winning formula. Colonna won't even say that his award-winners are his best. That distinction goes to labels such as Gloria Ferrer's and Round Hill's, which have performed for their wineries as they were intended to—by changing or developing their images and dramatically increasing sales through the implementation of insightful, innovative design and marketing.

"There is no 'right' answer, no easy solution to creating an effective, award-winning wine label," says Colonna. "Good design stems from marketing intelligence, not from imitation, cleverness, or great expense. You can't put a Rolls Royce grille on a Volkswagen and expect to fool anyone." ■

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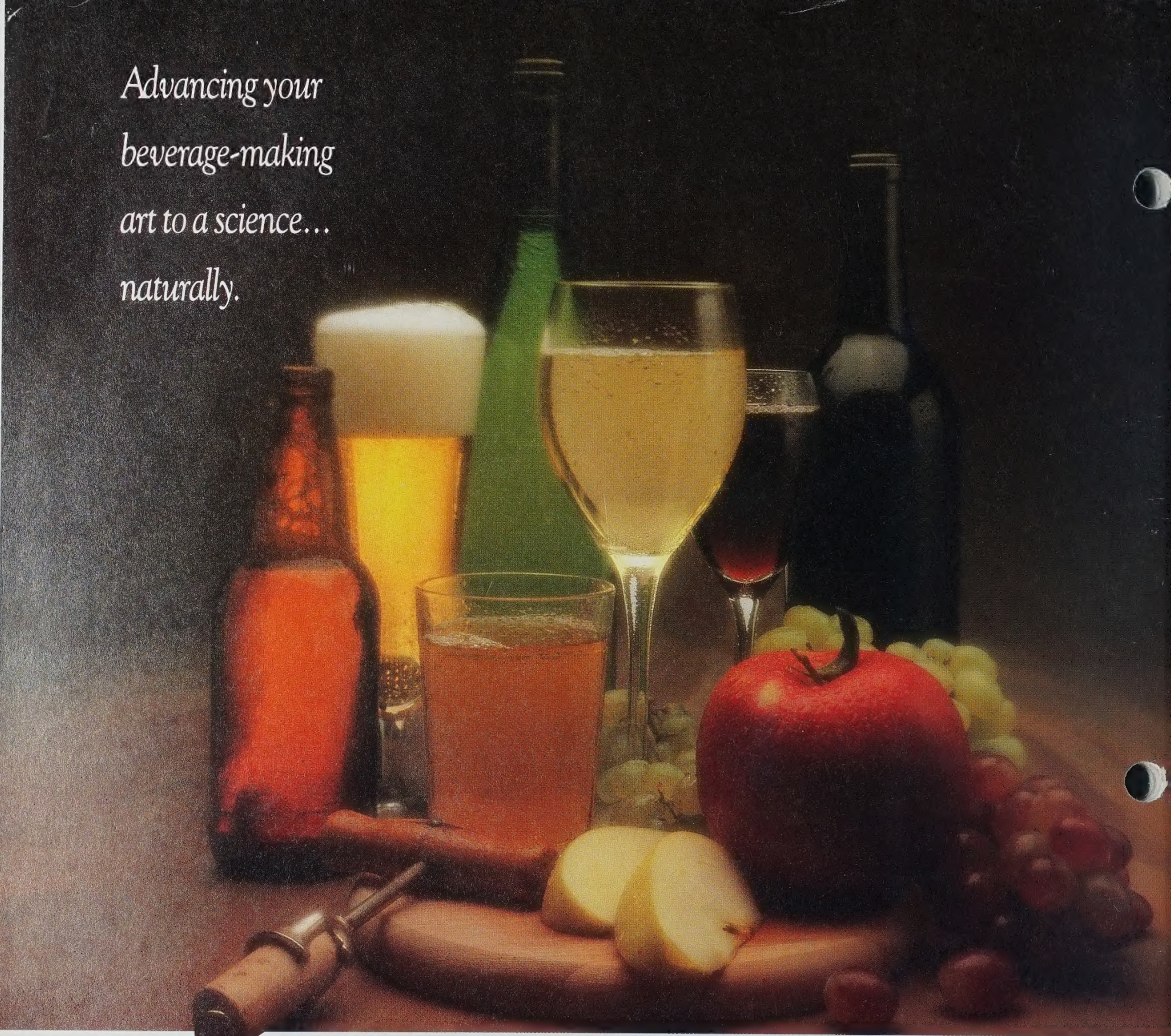

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